Interface learning
– New goals for museum and upper secondary school collaboration

PhD dissertation
Sally Thorhauge

The Department of Aesthetics and Communication, Aarhus University
The Danish Industrial Museum
August 2014
Supervisor: Ane Hejlskov Larsen
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I am very grateful to the students, teachers and museum professionals who participated in my research and thus made this dissertation possible.
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Section I The background and context of the research

This study is, basically, about a concept called intrface. All of the empirical data collected for analysis and interpretation in the study originate in the collaborations and learning activities of people working within this concept. Hence, giving a thorough description of its history and current context will build a foundation for understanding subsequent treatment of the data.¹ Today, intrface is an association of upper secondary schools and local museums in Denmark, who work in partnership to develop, carry out and evaluate museum-based coursework for students. The intrface concept encompasses all aspects of intrface activity, e.g. the collaboration of the partnerships, the design and content of the coursework they develop, and the learning the students experience as a result of their collaboration.

Chapter 1: The intrface concept and the PhD project

The original intrface project evolved out of several smaller, shorter projects, the purpose of which was to develop collaboration between a number of museums and upper secondary schools in Denmark as well as with the University of Aarhus. Actual planning of the intrface project started in 2007 and the details of how it would be run and the funding needed to put the plans in action were in place by early 2008. It was launched on September 8, 2008 at the former Museum of Aarhus³ and ended as a project on July 31, 2011.

Participating schools and museums were funded by the Regional Council of Central Denmark Region and the Danish Agency for Culture, respectively. The project was the object of a research project carried out by Associate Professor Ane Hejlskov Larsen, the head of the Center for Museology at the University of Aarhus. There was a steering committee comprised of an equal number of upper secondary school principals and museum directors as well as Associate Professor Arne Kjær, the former dean of the Faculty of the Humanities at the University of Aarhus. At the end of the project, there were 30 functioning and productive partnerships in the Central Denmark Region. Seventy learning programs for the students had been developed, carried out, evaluated and uploaded onto the intrface website, comprising 32 different school subjects. There were 110 teachers, 45

¹ Thorhauge (2010) Much of the following text (until 1.1) is more or less a direct copy of the corresponding text in What is intrface?, which I wrote and published on the intrface website in 2010.
² The director of the Danish Industrial Museum was the main force behind the process of securing funds for the project.
³ This museum no longer exists. It was merged with The Old Town museum in Aarhus in 2012.
museum staff members and approximately 3,200 students who had participated in the project.

On August 1, 2011, intrface reemerged as a permanent association of partnerships with the intrface website\(^1\) as its virtual meeting point. Each intrface school and museum now “subscribes to” intrface, and their subscription fees are used to pay a part-time salary to two general office managers, who maintain the website, organize knowledge-sharing and knowledge-building conferences for intrface members, work to increase the number of intrface partnerships and to establish “clusters” of partnerships, where several partnerships can work together and possibly exchange partners. There is an active executive committee, which is comprised of three museum directors, three upper secondary school principals and a representative of the University of Aarhus.

All three museum categories are represented in intrface: Cultural history museums, natural history museums and art museums. Also all four types of upper secondary schools in Denmark are represented. The students at these schools generally range from 16 to 20 years of age. The schools are preparatory schools, meaning that the students who attend them will typically continue with some form of further education upon graduating.

There are two main goals of intrface, which are closely related. One is to strengthen and sustain collaboration between secondary schools and local museums on the development, implementation and evaluation of museum-based coursework, targeted at upper secondary school students and relevant to their school curriculum. The second goal is to make local museums accessible, familiar and relevant to students by ensuring that as much of the coursework as possible takes place at the museum, with museum professionals and teachers working together on equal terms to provide an immersive learning experience for the students. In many cases, museum professionals also appear in the classrooms to teach the students on their own home ground.

There are two other goals of a more pragmatic nature. The first is to convince secondary school teachers to perceive and use local museums as a learning resource on a par with textbooks, libraries and the internet. The second is simply to increase the number of young people visiting museums. A survey carried out in 2009 by the Danish Agency for Culture showed that 53% of the museums in Denmark were visited by five or fewer upper secondary school classes pr. year.\(^2\) Because intrface coursework compels students to use

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\(^1\) See the intrface website
\(^2\) The Danish Agency for Culture (2009A), p. 49
their school’s partner museum as a knowledge resource, it ensures that they have prolonged contact with this museum at least once during their three-year upper secondary education.

It seems clear that much of the motivation behind *intrface* membership and participation derives from a belief that the experiences the students have at the museums and with museum staff will have a lasting effect on how they perceive museums and, in a broader perspective, will give them a greater understanding of their cultural heritage, of the importance of preserving it and of its relevance to their present and future lives, not only in their local area, but also cultural heritage as such.

The organization of *intrface* is decentralized, and all development work is carried out by the members, who are organized in partnerships consisting of an upper secondary school and a local museum. The partnerships of the *intrface* project were invited by the project managers to participate; since *intrface* became an association of fee-paying members, several schools and museums have joined forces and joined the association.¹

All educational material that is developed, tested and evaluated by these partnerships is uploaded to www.intrface.dk for other schools and museums to use and / or be inspired by.

In form and content the coursework must be reusable so that incorporating it in their lesson plans can easily be repeated by other teachers, also at other schools. The basic framework and concepts of a lot of *intrface* coursework can furthermore be adapted to fit other museums. For example, the coursework entitled “What Is the Value of Art?”, which was developed by Horsens Art Museum and Toerring Gymnasium, can be re-used as educational material by any other art museum.

The website reveals that the coursework developed in the *intrface* project spans a broad array of topics and a great number of school subjects.

### 1.1 Purpose of the PhD project

The purpose of this PhD project is threefold: First, to analyze the learning experiences of upper secondary school students doing school-related coursework in a museum learning environment; second, to analyze the effects of the collaboration between teachers and museum staff as regards their own learning, e.g. as a professional broadening of their own pedagogical and educative practices; third, to discover if and how the teachers’ and museum professionals’ collaboration influences the students’ learning experiences. An

¹ E.g. Hammersby Gymnasium & HF and Hammersby Museum, Coastal Museums and Westby Gymnasium
ambition of the dissertation is furthermore to present findings that museum-school partnerships can use to develop their potential as a combined learning environment for these students.

From a broader perspective, this PhD serves cultural-political and educational-political purposes as well, as a review of its stakeholders reveals. The *interface* project was born out of the Danish Agency for Culture’s Dissemination Plan¹ and Central Denmark Region’s Guidelines for region’s cultural development.² Both of these institutions funded the project and both are stakeholders in the PhD, of which the Danish Agency for Culture was the initiator. The Department of Regional Development at Central Denmark Region was (and is) responsible for the planning and development of education in the region,³ and had an interest in funding first the *interface* project, which i.a. built bridges between the cultural sector and the educational sector at a local level, and then this research project as the scholarly qualification of the project. A key action area of the Danish Agency for Culture’s Dissemination Plan was research about museums’ dissemination and education, to which the present research project belongs. Central Denmark Region and the Danish Agency for Culture are interested in drawing research-based knowledge out of the project. A third stakeholder is the Graduate School of Arts at the University of Aarhus; an important motivation for its interest in the PhD is that it has potential as regards the development of upper secondary school educational theory and practice, which is an area of business and study at the university. The fourth stakeholder is the upper secondary school Horsens Gymnasium, my place of work for many years. Similar to the Graduate School, the leadership at the school is interested in developing educational theory and practice as well as the school’s collaborative activities with local partners.

### 1.2 Research questions

The research questions of this PhD focus on certain circumstances that I noticed and wondered about in relation to student learning and partnership collaboration from my time as project manager of the *interface* project:

It seemed that students were stimulated to tap into many different competences and skills and that their learning experience was enhanced when they did school-related coursework that involved being at and using the museum as a knowledge and learning

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¹ *Formidlingsplanen* 2007-2013, see 5.2.2 below.
² See 5.3 below.
³ Central Denmark Region (2012) (latest update)
resource. Their teachers and professionals from the museum had collaborated to develop and carry out this coursework, and it also seemed that the quality of the students’ learning experience was influenced by the quality of the partnership’s collaboration.

It seemed that many teachers and museum professionals were professionally inspired and enriched by this collaboration, not least because of the professional discussions that were generated when people from two educational institutions with very different approaches to brokering knowledge and experience worked together.

These observations have been transformed into two research questions:

1) How are upper secondary school students’ learning outcomes affected by their participation in coursework in a museum learning environment and which has been developed and is implemented by teachers and museum professionals in partnership?

2) How are the teachers’ and museums professionals’ understanding of their own and their partner’s communities of practice affected by their collaboration to develop and carry out coursework for students in a museum learning environment?

The first research question is in two related parts. It aims at generating research findings that shed light on students’ learning outcomes as a result of doing school-related coursework which involves using the museum as a learning environment and in continuation of this, on how their learning outcomes are affected by their teachers’ and the museum professionals’ collaboration. The second research question aims at generating research findings that shed light on what teachers and museum professionals learn from developing this coursework and carrying it out together.

1.3 Significance of the PhD project

The focus of my research is *in interface*, which is a concept of collaboration practiced by approximately seventy museums and upper secondary schools in Denmark, and my research contributes new knowledge to a variety of areas of research, e.g. museums as learning environments for 15- to 20-year-old students, museum-school collaboration, developing young people as a museum audience and, not least, learning outcomes resulting from meshing formal and informal learning environments.

From 2007 to 2013, the Danish Agency for Culture designated developing young people as a museum audience to be a key action area, and special funding earmarked for
this was made available to museums by the Agency\textsuperscript{1}. Of the nine funds museums could apply for in 2013, three had to do with developing museum dissemination and education\textsuperscript{2}. These funds were not exclusively targeted at developing museums’ initiatives for young people. However, as the Agency’s national user surveys\textsuperscript{3} from 2009 to 2012 consistently showed that young people were underrepresented as museum guests compared to their proportion of the general population, many museums applied for funds for projects whose purpose was to get more young people to visit their institutions.

One of this dissertation’s main contributions is that it examines and analyzes how upper secondary school students perceive museums as a learning environment. In Denmark, little research has been done regarding this age group’s learning experiences in museums\textsuperscript{4} despite the fact that young people’s use of museums was designated as a key action area by the Danish Agency for Culture.

Another contribution is that the dissertation examines the connection between teacher-museum professional collaboration and students’ learning experiences at the museum. Using well-known theories about collaboration between communities of practice, my research generates useful knowledge about how different types of museum-school collaboration produce different learning experiences for students; this knowledge can be used by museum-school partnerships to develop the potential of the combined learning environment of the museum and school. Besides this, useful knowledge is gained about the strengths and limitations of these theories as analytical tools in relation to museum-school collaborations.

\textsuperscript{1} The Danish Agency for Culture (2007). The Dissemination Plan (“Formidlingsplanen”) was launched in 2007. This was a six-year initiative to upgrade museums’ interpretational and educational activities for young people, i.a. by encouraging museums to produce curriculum-related teaching materials and programs for young people at secondary and upper secondary schools. Further encouragement to do this is provided by several reports the Agency has published since 2007, i.a. looking into which young people are non-users and why, The Danish Agency for Culture (2012A), or expanding upon the learning potential of museums, The Danish Agency for Culture (2009A) or offering best-practice example of successful projects, The Danish Agency for Culture (2009B)

\textsuperscript{2} Funds no. 1, 2 and 3, The Danish Agency for Culture (2013A). See also The Danish Agency for Culture (2013B)

\textsuperscript{3} The national user surveys for 2009-2012 can be found on the website. The Danish Agency for Culture (2014)

\textsuperscript{4} See 3.2.2 below.
A third contribution is that the research method is largely based on Generic Learning Outcomes (GLOs),\(^1\) an approach which has not been applied for PhD-level research in Denmark before. Through this study, much is discovered about the strengths and limitations of the GLOs as a set of measures intended for ascertaining the learning impact of museums on their guests. Using GLOs as a method of collecting and analyzing data in research of this kind in combination with American learning theorist Etienne Wenger’s theory about communities of practice to describe and analyze partnership collaboration between museums and upper secondary schools is unprecedented in Denmark. Thus, this PhD project contributes to knowledge about how the GLOs and Wenger’s theory can be used in research in the context of formal and informal learning institutions and their collaboration.

1.4 Summing up – the *intrface* concept and the PhD project

The collaborations and learning activities of five partnerships working within the *intrface* concept provide the data that are the basis for this research. The research questions which the analysis and interpretation of these data hope to answer evolved out of what I observed regarding collaboration and learning while I was manager of the *intrface* project.

In Denmark, long-term collaborations between teachers at upper secondary schools with museum professionals from local museums are uncommon, as most museum-school interaction involves elementary schools and most museums’ educative offerings to schools are targeted at children (and their teachers) in the elementary school level. Furthermore, the upper secondary school teachers’ and museum professionals’ collaboration, which is a fundamental aspect of the *intrface* concept, is in itself unusual in that, ideally, both groups of professionals play an equal part in the development, implementation and evaluation of the coursework. It is significant to discover by means of this research how the real-life partnerships’ collaboration functions and what effect it has on the coursework and the learning activities of the students engaged in them.

The collaboration and learning activities that took place in the five cases of this study reflect both the variety and the sameness of the collaborative and learning activities of the other *intrface* partnerships. The research findings are thus relevant for these other partnerships. Moreover, as the museums and upper secondary schools of the study cases

\(^1\) The Generic Learning Outcomes (GLOs) were developed in England in 2002 as a method to measure the learning impact museums and other cultural institutions had on their guests. See Chpt. 7 for a thorough presentation of the GLOs.
are parallel to upper secondary schools and museums in general in Denmark, where collaboration with external partners and learning activities of all kinds are everyday business, the research findings become relevant for them as well.

The scene is now set for the next five chapters about the research: Its design and methodological framework (Chapters 2 and 3), the methods used to gather and analyze data (Chapter 4), the institutional context within which the *intrasite* cases of this study function (Chapter 5) and the empirical basis for the study, including the selection and recruitment of the five cases (Chapter 6).
Chapter 2: Research design – why a mixed methods approach?

At an early stage of this study, I devised a model\(^1\) to illustrate how I visualized the objects of its focus. First of all, this research set out to study the learning that happens at the interface of two learning environments: The formal learning environment of the upper secondary school and the informal learning environment of the museum. The people who interact and learn at this interface are teachers, museum professionals and students. Their interaction is indicated by the double-headed arrows on the lines of the triangle connecting them. The red circle around the teachers and museum professionals at the bottom of the triangle indicates their partnership collaboration within the \textit{interface} context, which is also an important object of study. Finally, the double-headed red arrow between the students and the partners’ collaboration signifies the relationship between the teachers’ and museum professionals’ collaboration and the students, which is a third object of study in this research.

It was clear that in order to discover what I wanted to know, I would have to communicate with the three groups of people involved in the \textit{interface} context: Students, teachers and museum professionals. Interviews and surveys were the most straightforward tools to employ. In other words, my reasons for choosing interviews and online questionnaires as my main means of gathering data did not originate in a clear-cut idea about research methodology and method. My intention was to work in depth and in breadth by using a two-pronged approach and common sense told me that these two methods lent themselves well to achieving that goal. By the time the pilot study was to be carried out, I had also more or less decided which two main methods to use:

1) Generic Learning Outcomes as a tool for gathering and analyzing information regarding students’ learning experiences in a museum setting where the formal and the informal learning environments meet and mesh. This was a tried and tested method of measuring the impact of museum learning,\(^2\) and was designed to be used both in qualitative and quantitative evaluation.

2) American learning theorist Etienne Wenger’s theory about communities of practice\(^3\) as a set of concepts and models to use when analyzing the impact that

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\(^1\) Fig. 2a, Appendix Chpt. 2
\(^2\) See Chapter 7 below for a thorough presentation of the Generic Learning Outcomes
\(^3\) See Chapter 8 below for a thorough presentation of American learning theorist Etienne Wenger’s concepts and models
mixing or meshing these two environments had on the participating teachers and museum professionals. The two communities of practice in question are the upper secondary schools and museums of the partnerships.

My thoughts about using a mixed methods research design conformed well to accepted mixed methods research strategies, e.g. those advocated by American sociology professor Sharlene Nagy Hesse-Biber in her book Mixed Methods Research.\(^1\) Hesse-Biber defines mixed methods as being “a research design that uses both quantitative and qualitative data to answer a particular question or set of questions,”\(^2\) and goes on to explain the advantages and possible pitfalls of utilizing a mixed methods approach, the importance of differentiating between methodology and method as well as of establishing the researcher’s standpoint, what a qualitative approach to mixed methods research design entails and finally, three different approaches to mixed methods research, each of which she exemplifies with case studies. She rounds her book off by giving a step by step guideline for applying a qualitative approach to mixed methods research design.

Hesse-Biber emphasizes that a researcher should work out his research design, basing it upon a clearly articulated and well-founded theoretical framework, \textit{before} he actually begins doing the research. He should also be aware of his own research standpoint and personal worldview, and make an effort to understand and explain how both influence his choice of method(s).\(^3\) The methods or analytical tools I apply – the Generic Learning Outcomes and Wenger’s Communities of practice theory – are influenced by constructivist and social constructivist learning theory and reflect my basic theoretical perspective.

An adaption of Hesse-Biber’s model “The mixed methods process”\(^4\) illustrates the research design of this PhD project as I now see it.\(^5\) The first sub-sections of this chapter have to do with the “top” of the model: “Assumptions about the nature of reality” and “Methodology”, including my own research standpoint as well as a review of other research with the focus of this study: Learning in museums, learning theories, comparable studies regarding learning, formal and informal learning environments, collaboration between museums and schools and the research tools used in this research.

\(^1\) Hesse-Biber (2010)  
\(^3\) Op. cit., p. 32  
\(^4\) Op. cit., p. 76. This model is quite similar to the model presented in Hesse-Biber’s book; I have removed the notes and examples associated with each of the levels of the model.  
\(^5\) See Fig. 2b, Appendix Chpt. 2
Chapter 3: Methodology

My basic position is that theory and practice nourish each other. Although I do not use Grounded Theory (GT)¹ as my main analytical strategy, there are various aspects of the theory’s approach that fit very well my own approach to the collection, analysis and interpretation of data. For example, the research data originate in real life situations (interviews and to some extent field notes and photos of case participants) and the research is concerned with social processes that take place in real time – specifically communication between people of flesh and blood belonging to different communities of practice.

Moreover, GT is rooted in phenomenology, which is preoccupied with how individuals interpret their lived experiences, and more specifically in social constructivism,² which is not only the overarching epistemology within which my research is established but also the underlying philosophy of the interface project. This aligns itself with theories underlying the GLOs and Etienne Wenger’s theory regarding learning and communities of practice. Reality is constructed through human activity, learning is a social process carried out by individuals engaged in social activities, most often in a physical setting, and knowledge is culturally and socially constructed; it emerges over time and both forms, and is formed by, what the learner already knows. It alternates between an inductive and deductive approach. A GT analysis could be said to be constructed along very similar lines in that it emerges over time through a continuous process of learning (analysis), comparison, revision and renewed learning, thus alternating between inductive and deductive methods.

3.1 Learning as meaning-making

Basically, I understand learning as meaning-making, which occurs in two interdependent and inseparable processes: Meaning is created within the individual at the same time as it is created by the individual with others. The processes are interdependent, concurrent and mutually constitutive³. Below, I briefly present two approaches to learning that deal with its dual character.

¹ Charmaz (2006) “Stated simply, grounded theory methods consist of systematic, yet flexible guidelines for collecting and analyzing qualitative data to construct theories "grounded" in the data themselves.”, p. 2
² Op. cit. p. 83f
³ This understanding coincides with Jean Lave’s and Etienne Wenger’s definition of learning in: Lave (2001), p. 52
The first approach claims that learning arises from and is created by individuals in *social interaction with each other* and sees learning as *an aspect of social practice*. The set of assumptions underlying this understanding is identical to Etienne Wenger’s four premises, which are as follows:

1) “We are social beings. Far from being trivially true, this fact is a central part of learning.
2) Knowledge is a matter of competence with respect to valued enterprises – such as singing in tune, discovering scientific facts, fixing machines, writing poetry, being convivial, growing up as a boy or a girl, and so forth.
3) Knowing is a matter of participating in the pursuit of such enterprises, that is, of active engagement in the world.
4) Meaning – our ability to experience the world and our engagement with it as meaningful – is ultimately what learning is to produce.”

In this understanding of learning, social participation is the primary focus. Social participation is perceived as not only being e.g. superficial exchanges in the supermarket about exorbitant prices or beastly weather, but also as “a more encompassing process of being active participants in the *practices* of social communities and constructing *identities* in relation to these communities.” Wenger’s illustration of a social theory of learning illustrates the components that characterize learning through social participation: Meaning, practice, community and identity. These four components are organized around the concept of learning (as social participation) and refer to different ways of learning. Meaning is learning as experience, practice is learning as doing, community is learning as belonging and identity is learning as becoming.

The second approach, *constructivist* learning theory, belongs to the psychological approach to learning and can be summed up thus: “Constructivism is a philosophy of learning founded on the premise that we construct our own understanding of the world we live in by reflecting on our experiences. Each of us generates our own "rules" and "mental models," which we use to make sense of our experiences. Learning, therefore, is adapting

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1 Wenger (2007), p. 4. Etienne Wenger sees learning as an aspect of social practice. The concepts presented here, e.g. enterprises, engagement, meaning, etc., will be explained on the following pages.
2 Ibid.
3 Fig. 3a, Appendix Chpt. 3
our mental models to accommodate new experiences.”1 “Construct our own understanding”, “experience” and “the world we live in” are the key concepts in this definition of learning, and they interlace with Wenger’s concepts “meaning”, “participating in enterprises”, “engagement in the world” and “experience the world”.

Concerning the present research, the learning that is in focus is that of the students, teachers and museum staff members. Learning theory occupied primarily with social participation is used as the main analytical approach when working with teachers and museum staff; constructivist learning theory based on experiential, situated learning as well as a theoretical approach that explains learning as an inevitable element of social activity and interaction are used in relation to the students. It is important to emphasize that although the GLOs, which are employed in the analysis of the students’ experience of their learning, have a slightly different analytical slant than that of the Wengerian concepts that are used for analyzing the teachers’ and museum staff members’ learning through their collaboration, the modes of learning these two approaches deal with are in fact two sides of the same coin. They are complementary, occur simultaneously and “rub off” on each other.

Obviously, the social interaction of the students, taking place in a “foreign” learning environment (the museum), and the learning that is created through that interaction, in that setting, resembles the process of learning that the teachers and museum staff members experience when learning the ropes in a new community of practice, and for this reason can be analyzed similarly. Likewise, the teachers’ and museum staff’s learning adapts their “mental models”2 to accommodate new experiences, like the students, which would make it possible to apply the same analytical strategies here as are used when analyzing the students’ learning.

3.2 Review of research literature

In Hesse-Biber’s words, “the literature review should frame the context of your specific research problem.”3 In this sub-section, I present a selection of research literature that borders on or overlaps my “research problem”. It is categorized according to the main areas of focus of the dissertation as expressed in the research questions. The research

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1 Russell (1999), p. 1. Robert L. Russell is Program Director, Education and Human Resources at National Science Foundation in Washington D.C.
2 Ibid.
3 Hesse-Biber (2010), p. 36
literature included here concerns studies carried out in Denmark, Sweden, Norway, Israel, Australia, the United Kingdom and the United States.¹

As the first step and as a way of delineating the *intrface* project and concept, I briefly introduce a few important initiatives in Denmark which, like *intrface*, were either developed as a result of the funding that was made available to museums through the Danish Agency for Culture from 2007 to 2013² or in keeping with the Agency’s and the Dissemination Plan’s³ key action area regarding the development of Danish museums’ educational potential especially in relation to young people.⁴

3.2.1 Other projects and initiatives⁵
A few years after the *intrface* project was launched, *Learning Museum*⁶, based at the Museum of Contemporary Art in Roskilde, Denmark, was set in motion as a development project to run from 2011 to 2013. The project was funded by the Danish Agency for Culture. It was very similar to *intrface* in that it was based on cross-institutional collaborations whose purpose was to develop museum-based educational material. Pre-service teachers from thirteen colleges of education and museum educators at thirty museums were brought together in meaningful collaborative projects through which the participants learned about and from each other by i.a. developing museum-based educational material for elementary school students. An offshoot of the project was the publication of a book called *Learning Museum – Practice Handbook*,⁷ which is a collection of articles, interviews and texts about educational programs and internships that originated in the project. In an article published in 2014⁸, project leader Tine Seligmann described the purpose and outcomes of the project; the most important outcome was that the participating pre-service teachers and museum

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¹ A few titles appear directly in conjunction with the case analyses below.
² See note no. 1 under 1.3 Significance of the study above
³ The Dissemination Plan was the plan devised to stimulate cultural heritage institutions to develop their dissemination programs and activities. The Danish Agency for Culture (2007)
⁴ From 2007 to 2013, the Danish Agency for Culture published on its website the projects which had received funds within this key action area. Over the seven-year period, about 53 million DKK were given to approximately 170 projects dedicated to developing museums’ dissemination practice, 35 million DKK to the development of approximately 155 specific dissemination projects and a little over 10.5 million DKK to approximately 35 research projects, including the present PhD project. Each year’s funding is presented on a separate webpage, which can be accessed via the website. The Danish Agency for Culture (n.d.A) See also 5.2.2 below.
⁵ The Danish Agency for Culture published various booklets about the many projects it funded, i.a. a best-practice publication. The Danish Agency for Culture (2012B)
⁶ Learning Museum (2013) See also abstract about the project, Learning Museum (n.d.).
⁷ My translation of “Praksismanual.” Seligmann (2014A)
⁸ Seligmann (2014B)
educators both became better providers of meaningful educational programs through their collaboration.¹

An earlier initiative was the Egmont Knowledge Center² at SMK,³ the National Gallery of Denmark in Copenhagen. Its establishment was funded by the Egmont Foundation and among its accomplishments was the launching in 2006 of u.l.k. Art Labs, a successful, interactive laboratory for young people from 12 to 20 years old, dubbed “art pilots”, who work directly and virtually together and with i.a. museum professionals in various in-house and outwardly directed art projects. The museum builds long-term relationships with these young people, giving them insight into i.a. the latest research at the museum.

 Tilbygningen⁴ (The Annex), an interactive website providing a virtual extension of Thorvaldsen’s Museum in Copenhagen, was developed by the museum’s school services in collaboration with a professional design team with funds from the Danish Agency for Culture. It was opened in 2006 and its target group was and still is students from 14 to 18 years of age.

3.2.2 Research on students’ learning in museums
In 2007, museum curator⁵ Per Lunde Lauridsen headed a project called Heritage Learning in Mid- and Western Jutland,⁶ funded in part by the Danish Agency for Culture as part of the Dissemination Plan; the purpose of the project was to acquire knowledge about the dissemination practices of the area’s museums and heritage sites and to investigate how and why primary and secondary school teachers (K-9) used or did not use these learning spaces in their teaching activities⁷. On the basis of interviews and surveys, the report concluded i.a. that if issues having to do with the extra time spent on organizing visits and transporting the children to and from the site could be solved, teachers would use these sites twice as much as they did at the time. Teachers agreed with museum educators that museums offered more “authentic” learning experiences than it was possible to provide in the classroom and that the museum setting made it possible to organize activities that challenged ingrown social structures in the student group.⁸ This dissertation also focuses on

¹ Op. cit., p. 51
² National Gallery of Art (2007)
³ National Gallery of Art (English)
⁴ Thorvaldsen’s Museum Tilbygningen
⁵ All titles and workplaces are current. I apologize for any inaccuracies.
⁷ Op. cit. p. 2
(upper secondary) school teachers’ views regarding using museums as a learning environment.

Also in 2007, the Danish Agency for Culture, again as part of the Dissemination Plan, funded a research project “Når unge kommer til orde på museet” about user involvement at museums, with Tilbygningen as the case that was researched. The researcher, Associate Professor Lars Birch Andreasen, Aalborg University, investigated i.a how students experienced the dialogue-based teaching and interpretation used by the museum in their workshops and on the website. He concluded that this approach fostered feelings of engagement in the students and that they felt acknowledged as competent participants in the actual and virtual workshops. Theory about dialogue-based teaching is applied in the case analyses of this dissertation.

Associate Professor at University College Lillebælt Trine Hyllested defended her PhD dissertation When the Teacher Takes the School out of the School in 2007. Hyllested carried out three empirical studies which focused on why elementary and secondary school teachers in Denmark use out-of-school activities in their science lessons and how they support their students’ learning during these activities. She concluded that the teachers were interested in giving their students rich learning experiences which supported and promoted the use of different learning styles. She also found that lead-in activities and reinforcing activities in conjunction with the out-of-school activity had a valuable influence on the learning experience. Hyllested recommended that students of education and teachers are trained in incorporating out-of-school facilities and activities in their lessons and that professionals working at these facilities are trained in how best to support pedagogical activities, which the above-mentioned project Learning Museum addressed. A focus point in the analysis of the cases in this PhD is the organization of the out-of-school, museum-based coursework for the upper secondary school students.

In 2011, the journal Young Teachers published a special feature issue entitled Museum Didactics. In the foreword of the issue, Per Stig Møller, the Danish Minister for Culture at that time, wrote “Museum didactics is a prerequisite for museums’ professional

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1 An approximate translation of the title is “When young people are heard at museums”; Andreasen (2008)
3 Hyllested (2007) This is Hyllested’s own translation of the title “Når læreren tager skolen ud af skolen”
5 My translation of “Ung pædagoger”
6 Rasmussen (2011) My translation of “Museumsdidaktik”
and sustainable development as knowledge centers and learning environments … I urge museums and educational institutions to make a joint effort to develop the potential of museum didactics.\(^1\) The content of this exhortation was consistent with the thinking behind the key action areas of the Dissemination Plan, and the content of many of the articles in the journal offered different perspectives, practice-based or practice-led, on how museum didactics can be incorporated in experiential and/or dialogue-based educational programs for K-12 students and pre-service teachers.

The understanding of museum education in Dr. Berit Ljung’s dissertation Museum Education and Experience\(^2\) from 2009 was based on two empirical studies as well as relevant research literature and theoretical readings. Ljung, employed at the Center for Teaching and Learning at Stockholm University, was inspired by John Dewey and his philosophy of experiential learning. One of Ljung’s areas of focus was how young people visiting an art museum with their classmates and teachers experience an exhibition at an art museum, and she found that these young people were affected by the pictures on display, and they appreciated the opportunity to work together and discuss the many important thoughts and questions the pictures inspired in them.\(^3\) Her recommendations regarding museum visits with school were similar to Hylledsted’s.

In 2010, Associate Professor Eva Insulander, Mälardalens Högskola in Sweden, finished her PhD dissertation entitled Artefacts, Spaces, Visitors - A Study of Meaning-making in Museums\(^4\), which was also an empirical study using a mixed methods approach. She investigated and analyzed how visitors engaged with and understood two different museum exhibits and concluded that the rules, routines and conventions of museums regulate visitors’ behavior and thus as learning environments museums become normative in the way knowledge is organized and displayed and to a certain extent determine how visitors and museum professionals think and act in the museum context.\(^5\)

Mette Boritz Petersen, a museum curator at the National Museum of Denmark, defended her PhD dissertation entitled Formal Education in Museums – Cultural Analysis of Learning in Danish Cultural History Museums\(^6\) in 2012. In her research, which was an empirical study, Petersen investigated what kind of knowledge the educational programs at

\(^2\) Ljung (2009)
\(^3\) Op. cit., pp. 173-175
\(^4\) Insulander (2010)
\(^5\) Op. cit., p. 283
\(^6\) Petersen (2012),
cultural history museums offer visiting classes of students from grades 1 to 10 and the teaching practices that accompanied these programs, especially the use and learning impact of buildings, exhibits and objects. An important conclusion in relation to my own research was that the materiality of museums had a significant impact on the students’ learning.¹ Petersen also presented Generic Learning Outcomes as a measure of museums’ learning impact on e.g. students and questioned their relevance in relation to measuring the impact of conventional educational programs at cultural history museums, which are often comprised of a guided tour where the students are asked to listen and look, not to touch and manipulate. The teaching programs or coursework in the cases of the present research all involve some degree of touching and manipulation, i.e. are not based on conventional guided tours.²

In their article What is the question? Creating a learning environment in the exhibition³ from 2010, external Associate Professor Nana Quistgaard, the University of Copenhagen and Associate Professor Emeritus Bruno Ingemann, Roskilde University, presented the results of an experiment they conducted at a science center, where they recorded four 15- to 16-year-old students’ interactions with seven different exhibits after which one of the authors invited them to have a dialogue about their experiences. The students were asked open-ended questions meant to help them reflect on their interactions and relate them to other learning experiences and, importantly, to inspire them to ask their own questions. This article was followed by Nana Quistgaard’s article “Authentic questions can create real engaged dialogue at natural history museums” [my translation]⁴, in which she presented the results of an investigation involving sixty-five upper secondary school students, whose visit to a given museum was designed according to dialogue-based teaching principles, including the use of authentic questions. Quistgaard concluded that asking authentic questions promoted students’ engagement at the museum and learning outcomes.⁵

Dr. Janette Griffin, The University of Technology in Sydney, has studied and developed theory and practice concerning learning to learn and authentic learning at museums and science centers since the early 1990s. In an early article, she questioned the quality of the learning experiences of students visiting informal learning settings and

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1 Op. cit., p. 265
3 Quistgaard (2010A), pp. 50-63
4 Quistgaard (2010B), pp. 49-76
5 Op. cit., p. 74
concluded that these were optimized when students’ learning experience was designed to mimic natural learning methods of e.g. family groups, when their tasks were organized so they were finding answers to their own questions and not the teacher’s or the museum educator’s and when different learning styles and strategies were acknowledged and built into the design of the visit.¹ In a later article, Griffin presented the findings of several studies focused on discovering the nature and extent of learning of students visiting science centers and museums. Relevant to the present research, one of the important conclusions Griffin arrived at concerned the key role the teachers played in conjunction with the students’ visit.² In an article from 2004, Griffin underlined the importance of providing students visiting a museum with a learning context that encourages self-directed learning; having some control over their learning activities proved to facilitate their learning.³ As a result of three field studies, Griffin developed a framework called School-Museum Integrated Learning Experiences in Science (SMILES) which was presented in her PhD dissertation from 1998⁴; SMILES is based on three basic principles: Integration of school and museum learning, Provision of condition for self-directed learning and Facilitation of learning strategies appropriate to the setting.⁵ Griffin developed and tested a set of guidelines called “School-Museum Learning Framework”⁶ for primary school teachers to use in connection with teacher-led field trips to museums.

In the United Kingdom and the United States, comprehensive research has been done over several decades concerning museums as learning environments, and how museums can contribute to education, about how children and young people learn differently at museums than at school and how their teachers and museum professionals can work together and a number of other questions relevant to the present research. Professor Emeritus Eilean Hooper-Greenhill, the University of Leicester, has written extensively about museum learning and museum education and has exerted great influence on my understanding of both of these fields. Hooper-Greenhill and the group of academic researchers working with her at the School of Museum Studies at the University of

¹ Griffin (1994), p. 127
² Griffin (n.d.), p. 8
⁴ Griffin (1998)
⁵ Op. cit., p. xi
⁶ Op. cit., p. 121
Leicester\(^1\) developed the Generic Learning Outcomes, which comprise one of the basic analytical tools of my research.

Nina Simon, the Executive Director of the Santa Cruz Museum of Art and History, is the author of The Participatory Museum, published in 2010. In her book, Simon presents theories regarding the educational value of participation in museums; depending on how they are designed, participatory activities in museums can enhance people’s abilities to work with others from various backgrounds, to think creatively, to master and be critical of information and media sources and products and to think about, understand and manage their own learning.\(^2\) Simon’s thoughts on participation are relevant in relation to the analysis of the students’ participation in the museum-based coursework studied in the present research.

Based at Oregon State University, Dr. John H. Falk’s and Dr. Lynn D. Dierking’s far-reaching work on learning in and from museums, museums as learning institutions,\(^3\) identity and museums,\(^4\) sites for experiential learning\(^5\) as well as the development of the Contextual Model of Learning\(^6\) as a theoretical framework for understanding learning in museums have directly influenced the choice of perspective and approach of my research. Likewise, Professor Emeritus George E. Hein, the founding director of the Lesley University PhD program in Educational Studies. George Hein’s extensive writings since the early 1980s about i.a. museum learning,\(^7\) John Dewey and museum education\(^8\), and “the constructivist museum”\(^9\) laid the foundation for my understanding of experiential learning in connection with museum learning and coursework design.

### 3.2.3 Research on collaborations between schools and museums

The evaluation\(^10\) of the Egmont Foundation’s pilot project Contemporary Art and Young People 2002-2005 revealed that during the first year of the three-year project, the collaboration between the upper secondary school teachers and the museum educators was

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1. See Note 4 under 7.2 below for a list of the scholars who worked with Hooper-Greenhill.
2. Simon (2010), pp. 193-194
5. Falk (2007)
not optimal because their roles and functions in the project had not been defined sufficiently. This evaluation was carried out by researchers from the Department of Educational Studies at Roskilde University. They found that the teachers in the pilot project felt that their pedagogical expertise was not exploited and they were relegated to the sidelines of the project. The researchers concluded that the problem had arisen because the project managers had not taken into account that the teachers were the link between the art museums and the students’ everyday school life. The level of teacher and museum professional involvement is an important point of interest in the analyses of the \textit{interface} cases.

Two important articles by assistant lecturer Merethe Frøyland at Naturfagscenteret in Oslo and Associate Professor Guri Langholm at Høgskolen in Oslo were published in The Journal Nordic Museology: Schools and Museums Should Work More Closely Together in 2009\(^1\) and Ensuring Successful Collaboration between School and Museum in 2010\(^4\). The focus and findings of both articles overlap with the present research. The former is an analysis of a selection of interviews of teachers and museum educators before, during and after their collaboration in conjunction with the students’ visit to the museum. Frøyland and Guri concluded that the educational programs offered by museum educators did not contain one or more of the three components the authors regarded as essential if a museum visit was to be meaningful for students, namely that they are required to do tasks that are unique to the museum, and these tasks must be done in collaboration with classmates and finally, that the museum program is closely connected to the students’ curriculum. They also found that the museum educators knew very little about what the students learned from the visit and that the teachers did not always prepare or review the museum visit very carefully. Frøyland and Guri urged both teachers and museum educators take it upon themselves to improve their collaboration in order to ensure meaningful learning experiences for the students, i.a. by including the three components mentioned above in the educational programs. In the second article (2010), Frøyland and Guri present the results of an action research program they facilitated with twenty teachers and museum educators in Norway. The purpose of the program was to investigate the effect of adopting

\begin{enumerate}
\item Op. cit, p. 47
\item The schools in question were elementary and secondary schools (K-9).
\item Frøyland (2009), pp. 92-108
\item Frøyland (2010), pp. 75-90
\end{enumerate}
“Teaching for understanding” as a theoretical framework for the organization of educational content of students’ visits to and tasks at the museums. In other words, this article offered a solution to the problem they presented in their previous article. The authors concluded that using this theoretical framework ensured that the museum visit became a completely integrated part of the students’ schoolwork and recommended that when museums plan new educational programs, they should do in close collaboration with a school.

In 2005, the International Committee for Education and Cultural Action, one of the oldest international committees of the International Council of Museums (ICOM), published Museum Education & Partnerships, a rather confusingly arranged collection of articles presenting a wide range of partnership projects that had taken place in many different countries. In many of the articles describing the practices and policies of collaboration, emphasis was not only placed on the need for the development of “mutual understanding, respect and self-commitment” in partnerships but also that partners should share any financial expenses related to their collaboration.

In 2008, pedagogical designer at the Israel National Museum of Science, Yael Bamberger and Associate Professor at Technion Israel Institute of Technology, Tali Tal conducted a study that focused on the range of students’ learning outcomes generated by visits to natural history museums. They interviewed fifty 6th, 7th and 8th grade students the day after they had visited the museums. The educational programs at these museums were very different and on the basis of their interviews, the researchers concluded that there were three main types of learning outcomes regardless of the type of program although each program type fostered a greater or lesser degree of the three types: Content oriented, social oriented and interest oriented outcomes. Bamberger and Tal ended the article by recommending that schools and museums strengthen their collaboration by increasing the level of teachers’ involvement in planning and facilitating the students’ museum visit. As mentioned before, the level of teacher involvement is an important point of interest in the analyses of the interface cases.

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1 Op. cit., p. 75
2 Gesché-Koning (2005)
3 Op. cit., p. 4
4 Ibid.
5 Bamberger (2008)
In the United Kingdom, there is a long tradition of collaboration between institutions of formal education and cultural heritage institutions. Museums’ impact on the learning outcomes of visiting students was the object of the research conducted by the research team behind the development of the Generic Learning Outcomes.¹ This research is presented in Chapter 7 below.

In the United States, collaborative educational programs developed by partnerships between schools and museums have grown more common over the past thirty-five years, and there are several publications concerning building and sustaining such partnerships as a consequence. Some of these publications contribute best-practice cases written by practitioners in the field. As early as 1981, the Center for Museum Education at George Washington University published a sourcebook called Museum-School Partnerships: Plans & Programs², in which over fifty tried and tested educational programs involving partnership collaboration between places of formal education and museums are presented. The focus of the book is on “the collaborative effort”³, which the chapter titles and subtitles reveal, e.g. “Building Museum-School Bridges”, “Early Planning – how do we develop the partnership? How do we evaluate the results?”, “Working With Traditional School Audiences – Who initiated the collaboration? In which setting - School? Museum?”⁴

In 1996, the Institute of Museum Services (IMS) published a book called True Needs, True Partners: Museums and Schools Transforming Education⁵ describing fifteen partnership projects from 1994 and 1995. The purpose of the anthology was to disseminate the experiences and results of these partnerships’ endeavors with a view to i.a. identifying the characteristics of a successful partnership. At the end of the book there are two essays presenting the perspectives of museums and schools, respectively, regarding the rewards of close museum and school collaboration. An important message that was made clear in the partnerships’ contributions and the essays concerned “the value of museums planning with schools, not for them.”⁶

Kim Fortney, Deputy Director of the National History Day in Maryland and Beverly Sheppard, principal at BKS Consulting in Maryland, are the editors of the book An

¹ See 3.2.3 and Chpt. 7 below
² Lehman (1981)
³ Op. cit., p. 6
⁴ Op. cit., Table of Contents
⁵ Hirzy (1996)
⁶ Op. cit. p. 14 In Chpt. 3 Conditions of Partnership, a list of twelve conditions for successful museum and school partnerships is presented and the conditions are explained, pp. 49-60.
Alliance of Spirit, which explores collaboration in museum and school partnerships and is therefore very relevant in connection with the present study. The book offers “toolbox information and case studies” for museum educators and teachers to use in i.a. establishing and sustaining partnerships, planning educational programs and coursework aimed at stimulating different learning styles and making use of each other’s strengths and competences. The contributions in the book were based on theoretical work and practitioners’ expertise, some of which is very similar to the *interactive* case data.

Partnerships between museum and schools have proved so successful that many museum-schools have been established, many of which are also museum magnet schools. Director of Instructional Design and Learning Solutions at Decision Simulation LLC, Kira S. King’s PhD dissertation investigated four museum-schools with a view to creating a typology of museum schools, including the degree of collaboration between the partners, and ultimately to “guide the future design of museum learning educational systems.”

In his PhD dissertation of the same year, Andrew R. Heughins, the University of Southern California, explored the historical development of a museum-school and the systemic changes that were necessary for it to undergo in order to achieve a unified entity in which the formal learning environment of the school and the informal learning environment of the museum could be joined successfully.

The purpose of Kansas State University lecturer Cari Barragree’s dissertation one year later was to develop a step-by-step guide for museum and school partnerships to use when they developed teaching materials for high school social studies. She concluded that such resources help museum staff and teachers to develop and improve education.

Two years later, in 2009, researcher at COSI, Columbus, Ohio, Mary Ann Wojton’s PhD dissertation centered around first defining the roadblocks in the way of establishing

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1 Fortney (2010) In the Introduction, Fortney cites an earlier book she edited called Building Museum and School Partnerships (1993) and calls the reader’s attention to the enormous development of collaborative partnerships between museums and school in the intervening seventeen years. New communication technology is emphasized as being one of the primary movers of this development.
2 Op. cit., p. ix
3 For the official definition of a museum magnet school, see US government definition of magnet school, US Department of Education (2009).
4 See Section 8.1 below and Fig. 8e, Appendix Chpt. 8.
5 King (1998A), pp. v-vi
6 Heughins (2006), p. vi
8 Op. cit., p. 6
10 Wojton (2009)
and sustaining effective partnerships and then, through an in-depth study of one such partnership, formulating four basic elements that effective partnerships should have. She developed the Partnership Tapestry model illustrating the critical elements of partnerships which are comprised of four basic elements and tools, e.g. mutually-developed goals, and four interpersonal elements, e.g. personal responsibility, which, when woven together “reinforces the fabric of the partnership and makes it stronger.”

3.2.4 Research literature: Generic Learning Outcomes (GLOs)

The Generic Learning Outcomes were developed in 2001-2002 as a set of measures that cultural heritage institutions could use to measure how they impacted visitors’ learning. The research of the team behind the development of the GLO framework is introduced in Chapter 7 below.

The Nordic Centre of Heritage Learning (NCK) published the report Possibilities of Cultural Heritage in Generic Learning Outcomes in 2008. The report was the result of an extensive study and evaluation of how cultural heritage institutions in Scandinavia contribute to lifelong learning. The findings of the study indicated i.a. that the learning taking place at museums and other cultural heritage institutions corresponds to the five areas of learning represented by the GLOs. Furthermore, the study showed that these learning activities corresponded to the eight key competences for lifelong learning, as defined by the European Union. The report also indicated that much of the learning taking place at Nordic cultural heritage institutions was relevant to the labor market, e.g. the competence learning to learn.

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2 See Chpt. 7 below for a thorough presentation of the GLOs. The GLOs are used extensively by cultural heritage institutions in the UK, where they were developed in 2001-2002 by a research team (LIRP) led by the Research Centre for Museums and Galleries (RCMG) in the Dept. of Museum Studies at Leicester University in the UK. The LIRP team was commissioned by the Museums, Libraries and Archives Council (MLA) and their motive for developing the GLO framework was to be able present policy makers and funding bodies with evidence of the learning impact and significance of these institutions. The GLOs are also used in several cultural heritage institutions in Sweden, fewer in Norway and even fewer in Denmark. In 2011, Jan Sas and Ruben Smit of the Reinwardt Academy in Amsterdam carried out a pilot study “Measuring Generic Learning Outcomes in the Netherlands” in which they concluded that the GLOs were adaptable to the Dutch context, that it was a time-consuming system to implement, and that it provided terminology that made it possible to communicate with non-professionals about learning outcomes, Sas (2011)
3 Zipsane (2008) Dr. Henrik Zipsane is Director of the Jamtli, the county museum of Jämtland in Sweden.
4 See below: Section 7.3.3 Learning outcomes and EU’s Eight Key Competences
5 Zipsane (2008), pp. 111-112
At the time of writing, researcher Sara Grut at NCK is in the final stages of putting together a comprehensive report evaluating the effect of the Swedish national program The Creative School in schools and cultural heritage institutions. The report is the result of a three-year study, funded by the Swedish Arts Council, which focuses on the students’, teachers’ and museums’ experience of The Creative School program. NCK allied itself with five museums and one university and, regarding the students’ experiences, the GLOs were chosen as the framework for the investigation. Some 1,900 elementary school students participated in the investigation, as well as thirteen museum educators and eighty-two teachers and school leaders. The preliminary results show i.a. that teachers have very positive recollections of the museums’ contribution to the students’ learning, and teachers and students alike emphasize the importance of the students being given the opportunity to perform in a different learning context. The performance of the museum educator is vital for the success of the students’ learning outcomes.

In her master’s thesis School and Museum in Partnership – a study of GLO as supporting tool towards a transforming learning process from 2014, museum educator at Kalmar Läns Museum, Helen Eklund, interviewed three museum educators from different museums about using GLOs in their institutions as a framework in the development of their formal and informal dissemination and interpretation activities. Her findings indicated that the GLOs were considered especially useful because they provide a common terminology to use when designing and implementing educational programs and a way to measure these programs’ impact on their users.

3.2.5 Research on museum-school collaboration using Wenger’s theory

In 2006, Michelle Phillips, then senior researcher at the Center for Informal Learning and Schools in California, carried out a mixed methods study on museum-schools in the US with a view to developing “a framework for conceptualizing museum-schools.” She investigated the motivation behind the creation of museum-schools, how they function and what the students, teachers and the community gain from them. She concluded that no

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1 Grut (2014)
2 The Nordic Centre of Heritage Learning (2013)
3 Grut (2014), p. 83
4 Op. cit., p. 58
5 NB: This report is still a work-in-progress as of July 3, 2014
6 Eklund (2014)
7 Op. cit., p. i
8 Phillips (2006), p. 1
single, linear model could capture the complexity of the museum-school, which she conceptualized as a “hybrid space” which is not typical of the museum environment or of the school environment and not used in the same way as the participants would traditionally use the school and the museum. She discovered that the boundary between the partners was porous but did not dissolve, and that their collaborative practice fostered new perspectives on learning, teaching and sharing responsibility.\(^2\) Phillips utilized learning theorist Dr. Etienne Wenger’s social theory of learning and communities of practice theory to analyze and understand the experiences and learning of the people who worked at museum-schools she studied. Phillips’ thinking and conclusions are relevant in connection with the analysis of interface partnership collaboration and the learning that takes place at the interface that can be created through this collaboration.

James F. Kisiel at California State University carried out an empirical study in 2013 in order to identify and explain the challenges teachers and staff members at informal science education institutions (ISEIs\(^3\)) face in connection with situations where they interact. Like Michelle Phillips, Kisiel also employed Etienne Wenger’s community of practice theory as a framework for gathering and analyzing information about the two communities of practice, focusing on the issues of authority, capacity, communication and complexity in his investigation.\(^4\) He collected information regarding i.a. boundary activities from more than 200 teachers and ISEI staff members, partly by means of an online survey and partly through interviews and focus groups. Like Michelle Phillips, Kisiel concluded i.a. that collaboration between the two types of institutions was extremely complex and involved several communities of practice within each institution and that acknowledging and taking account of this complexity was critical to the success of the collaboration.\(^5\)

### 3.2.6 Learning theories in conjunction with the case analyses

Danish learning theorist Mads Hermansen’s book Omlæring\(^6\) from 2003 presents theory and models about pedagogical method and learning processes. In regard to the present research, his theoretical concept “toil and moil” is relevant to use when analyzing how students cope with learning activities that take place in an unfamiliar environment such as a

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1 Op. cit., p. 17. The linear model Michelle Phillips was referring to was Kira S. King’s Partnership Structure Continuum.
2 Op. cit., p. 18
3 Kisiel (2014), p. 342
4 Ibid.
6 Hermansen (2003), pp. 69-70
museum. “Toil and moil” is the learning process involving experimentation, reflection and making choices.¹

Norwegian professor in learning theory Dr. Olga Dysthe, Art Educator at the Danish National Gallery Nana Bernhardt and Director of School Services at Thorvaldsens Museum Line Esbjørn published the book Dialogue-Based Teaching in 2013.² Their concepts of “authentic questions” and “substantial engagement”, originating in theory about dialogue-based teaching, provide an illuminative perspective to take when analyzing how the students’ group work functioned while they were doing museum-based coursework.

The concepts of intrinsic and extrinsic motivation in learning,³ refined and modified by psychologists Edward L. Deci and Richard M. Ryan, the University of Rochester in New York, are illustrative to use in the analysis of the students’ motivation for learning while they are doing museum-based coursework.

The concept of flow, developed by psychologist, Dr. Mihaly Csíkszentmihalyi,⁴ Claremont Graduate University, California, is relevant to use in connection with the analysis of the students’ learning experiences in one of the cases

### 3.3 Summing up – Methodology

Sharlene Nagy Hesse-Biber’s mixed methods model provides the design of the research as well as the structure of the present dissertation. The “cloud” at the stop of her mixed methods model represents my research standpoint as well as my underlying understanding of the reality that is the focus of this research. The reality of this research is the learning of the students, teachers and museum professionals. I understand learning as meaning-making, constructed by individuals within themselves and in social interaction with others.

Learning builds on previous learning; previous learning can be called mental models which are drawn upon to create meaning out of new experiences. Prior knowledge and motivation are important aspects of learning, as are its setting and context.

The theoretical and analytical approach of this study is rooted in social constructivism.⁵ In order to analyze and interpret the data, theories dealing with learning

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¹ Ibid.”Toil and moil” is how I translate Hermansen’s concept of “møje.”
² Dysthe (2013)
³ Deci (1985). Deci and Ryan are the originators of SDT (Self-Determination Theory), which, as the title implies, deals extensively with motivation in learning.
⁴ Csíkszentmihalyi (2007)
⁵ See section 3.1
and motivation in formal and informal learning environments and with learning originating in collaboration between communities of practice are chosen and applied. Several of these theories are introduced and applied in conjunction with the case analyses and therefore are not included in the review of research literature, which presents the titles of many research projects with focus areas similar to or interfacing with my own. By employing Generic Learning Outcomes and Wenger’s community of practice theory as analytical tools and linking the learning of the students in my cases with the collaborative practice and learning of the teachers and museum professionals, my research adds a new perspective to these fields of research.

An eclectic selection of the research literature is used actively in the analysis of the cases of this dissertation as a way to supplement or extend the analytical findings that come to light when using Wenger’s theory and the GLOs.

In Chapter 4, I present and explain the qualitative and quantitative methods I utilized to collect data. “Outside factors” are then dealt with, followed by a short section in which the empirical basis of the study is presented. Out of this research come some of the tools I use in the analysis and interpretation of the data and of other research, which are explained thoroughly in Chapters 7 and 8.
Chapter 4: Methods

My research process was organized as an empirical study using mixed methods. Ideally the data-collection process was to happen like this:

1) Observation of teachers’ and museum staff members’ meetings when they were planning *interface* coursework and
2) Observation of students at the museum doing this coursework
3) Observation of the teachers and museum staff members at the museum while the students were doing their coursework
4) Two surveys as online questionnaires for the students, one before their coursework at the museum and one approximately a fortnight after their coursework at the museum, generating a sizable body of quantitative data
5) Semi-structured group interviews with students and semi-structured individual interviews with teachers and museum staff members shortly after the coursework was completed, meaning that all the interviewees had the *interface* coursework and collaboration fresh in their memories; the interviews generated a large body of qualitative data

4.1 Field notes

Ad 1) When it was possible, I participated in partnership meetings. As it turned out, this was only practicable in two of the five cases. I took notes of the proceedings, attempting to capture in the conversation how the partners initiated, negotiated and agreed on their joint enterprise. These observations are useful as supplementary data when the partners’ interview data are analyzed and interpreted.

Ad 2) Again, when it was possible, I observed the students while they were doing their coursework at the museum, which I was able to do in four of the five cases. The time the classes spent at the museums varied from ninety minutes to several hours distributed over

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1 366 graphs were generated from the quantitative data. Graphs that are referenced in the analyses and elsewhere in the dissertation can be found in the associated chapter appendix or in the appendix called “Appendix Common Graphs.”

2 There are approximately 600 pages of transcripts. These were used to create the tables used as qualitative data for the case analyses. These tables can be found in the appendix called “Appendix All Tables.”

3 The notes were edited and translated to English and can be found in the appendix called “Partnership Introductions and Field Notes.”
several days. I took many photographs\textsuperscript{1} and notes,\textsuperscript{2} focusing on the students’ behavior in their interaction with each other and with the teachers and the people at the museum. I also noted how the students reacted to the coursework they were doing and to the museum environment. The data generated from these observations are used as supplementary material when the students’ interview data are analyzed and interpreted.

Ad 3) While the students were at the museum, I also wrote down my observations of the teachers’ and museum professionals’ interaction with each other and with the students.\textsuperscript{3} These observations are used as supplementary data in the analysis and interpretation of the partnerships’ collaborations as well as in the analytical discussion of the learning environment that they created for the students, both seen from their point of view and from the students’ perspective.

### 4.2 Online questionnaires

Ad 4) The online questionnaires\textsuperscript{4} or surveys were fashioned according to the suggestions in the GLO quantitative data tutorial available on the Inspiring Learning for All (MLA) website,\textsuperscript{5} at least as far as structure was concerned.

Each GLO has several sub-categories.\textsuperscript{6} On the online surveys, I asked questions that fit the relevant sub-categories under each GLO. A few examples of questions on the pre-survey questionnaire regarding GLO 2 (Skills) are:

- I will become more aware of how I can use museum objects to communicate subject-matter. (Being able to do new things)
- I will become more confident when I have to explain the subject(s) to others orally. (Oral communication skills)
- I will become better at working in groups. (Social skills)

\textsuperscript{1} Due to the depersonalization of the data (pseudonyms for all interviewees and place names), I have included very few photographs; they can be found in the Field Notes of the classes’ visits and Appendix Chpt. 11. Faces in the photographs have been blurred.
\textsuperscript{2} The notes were edited and translated to English and can be found in the appendix called “Partnership Introductions and Field Notes.”
\textsuperscript{3} As the notes from these observations were written at the same time as the notes concerning the students, they form part of the same edited and translated text in the appendix called “Partnership Introductions and Field Notes.”
\textsuperscript{4} See Fig. 4a and Fig. 4b, Appendix Chpt. 4 for pre-survey and post-survey questionnaires, respectively. I have translated them from the Danish.
\textsuperscript{5} Museums, Libraries and Archives Council (2008)
\textsuperscript{6} Taken together, the sub-categories for each GLO can also be said to function as a definition for that GLO. See Fig. 7b, Appendix Chpt. 7
Pre- and post-survey questions were the same within the five GLO categories in order to be able to compare the students’ expectations with their remembered experiences. The only difference was that the questions on the post-survey were written in the past tense. Under each GLO question on the surveys, there were five answer options for the students to choose among: Definitely, Pretty sure, Not very likely, Not at all and Do not know. After the surveys were completed and returned, the answers were tallied and graphs showing the results were produced showing how the individual student’s expected learning outcomes on the pre-survey had changed or had not changed on the post-survey. This information is used to support or challenge the qualitative data generated in the interviews with the students.

Compared to the wording of the quantitative data tutorial’s questions on the MLA website, the wording of my research pre- and post-survey questions was more specific to the kind of thinking and learning expected of students at upper secondary schools in Denmark. The questions presupposed a certain level of mature consciousness regarding e.g. how to recognize learning, the complexities of group work, their own (the students’) academic level, how classmates’ and one’s own behavior might change in a learning environment different from that of the school.

The fact that the students answered an online questionnaire about their expectations regarding working with their school subject(s) at the museum shortly before they started doing so may have had some influence on how they actually experienced it. For example, students may have become more focused on their learning at the museum compared to their learning at school simply because the questions on the questionnaire had to with what they expected to get out of doing school-related work in that setting.

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1 Individual graphs that are referenced specifically in the case analyses are in the relevant chapter appendix.

There were two questions missing on the post-survey questionnaire: The question “What three words do you think of when you come across the word “museum”?” is missing on page 2 of the questionnaire. Question C4 “My attitude to the museum will change” from the pre-survey is missing. I felt that I should get answers to both these questions, so the students who had answered the pre-survey were asked to answer a very short follow-up questionnaire. This procedure was not optimal for two reasons. First of all, the students had been informed that the post-survey questionnaire was the last thing I would ask them to do, so I was trying their – and their teachers’ – patience by giving them yet another task to do. Secondly, sending a separate questionnaire with these two questions directed disproportionate attention to them but I was more concerned about getting answers to the two questions on the follow-up questionnaire than with these considerations. However, as far fewer students answered the follow-up questionnaire than those who answered the pre-survey, I finally ended up not using the data.
Besides questions about personal information (name, age, gender) and the names of the school and museum, there were two other questions on pre- and post-surveys that had to do with how the students’ visit to the museum was prepared in class and how it was reviewed in class, respectively. The answers the students ticked on the questionnaires are used as supplementary data, e.g. in relation to how their teacher describes pre- and post-treatment of the visit.

Google Docs Forms was the program used for these online surveys. I created a survey form for the pre- and post-survey, respectively, and sent a link to each form out in an e-mail to the teachers. The Google Docs Forms fed the survey results directly into a Google Docs spreadsheet from which they could be exported to e.g. Excel. I enlisted the help of a student assistant who exported all the results to Excel spreadsheets. On the basis of the acquired data and as per my instructions, he generated the survey-related documents and graphs needed for this research.

4.3 Interviews
Ad 5) My method of interviewing closely follows former Professor of Educational Psychology and Director of the Center of Qualitative Research at the University of Aarhus, the late Steinar Kvale’s “Seven Stages of an Interview Investigation.”

Kvale’s work pre-dates Hesse-Biber’s by some fourteen years, but the underlying assumptions of their approaches to qualitative research are very similar, e.g. that “social reality is socially constructed” and that qualitative research must attempt to understand how people extract and create meaning out of their social world. In other words, applying Kvale’s method of qualitative research interviewing is in line with the overall theoretical standpoint of my research design.

In structure and intent, the interview guides and the wording of the questions conform to Kvale’s recommendations for semi-structured interviews. The questions on both interview guides, for students and teachers and museum professionals, were used as guidelines, i.e. I did not adhere strictly to the wording or the order of the questions. In order

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1 See Graph Prep and Graph Eval, Appendix Common Graphs
2 Kenneth Gabriel Birkedahl, Junior Manager and Analytical Assistant, Analytics Group AU IT, Aarhus University
3 Kvale (1996), p. 88. The seven stages are thematizing, designing, interviewing, transcribing, analyzing, verifying and reporting.
4 Hesse-Biber (2010), p. 86
5 Kvale (1996), pp. 129-143
to facilitate dialogue, answers that brought the interview outside of the guidelines were not cut off immediately.

Although both interview guides were used flexibly, the interview guide used for the students was followed a little more closely, mainly because it was used for group interviews where I was keen to ensure each interviewee equal time to speak. Sidetracking was kept at a minimum unless a student offered an insight which inspired spontaneous pertinent responses and/or questions from his or her classmates.

The interview guide for students

The questions on the interview guide used for the group interviews with students mainly revolved around the GLOs. After telling the students about the reason for the interview and about how it was going to be conducted, I asked each of them to introduce themselves and tell me what they remembered best from the working with their coursework at the museum. Then I reminded them that they had answered two questionnaires like all the other students involved in this study and that I was interested in learning even more about their experience of learning at the museum. During the interview I sometimes mentioned the opinions of other students. The thinking behind this was partly to contextualize the question and partly to normalize the situation by letting them know that other students had also been in the same situation as they were in.

The students’ statements and responses in the interviews coupled with their responses on the online questionnaires amassed a sizable amount of data to use in the discussion of the first research question: “How are upper secondary school students’ learning outcomes affected by their participation in coursework in a museum learning environment and which has been developed and is implemented by teachers and museum professionals in partnership?”

The interview guides for teachers and museum professionals

I used the same interview guide for both teachers and museum professionals. There were four main areas of focus: 1) the learning environment at the school and the museum, respectively; 2) the learning of the students, the teacher and the museum professional; 3) the collaboration between the two communities of practice (“school” and “museum”),

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1 See Fig. 4c, Appendix Chpt. 4 for the interview guide for students. I have paraphrased it and translated it from the Danish.
2 The Generic Learning Outcomes or GLOs have already been mentioned several times. In Chapter 7, the GLOs are presented in detail.
3 See Fig. 4d, Appendix Chpt. 4 for the interview guide for teachers and museum employees. I have translated it from the Danish.
including a SWOT analysis\(^1\) of one’s own community of practice as well as of the collaboration between the two communities of practice; 4) the future of the partnership and its work and collaboration. When the arrangements for an interview were settled, I sent the interviewee an e-mail containing the four main areas of focus so he or she had time to think about them before the interview.

The interview guide used for teachers and museum professionals also asked GLO-related questions. These were angled differently as it was the teachers’ and museum professionals’ views of the students’ learning within each GLO that I was interested in. Interviewees from the museums sometimes felt that it was difficult to answer these questions, as they did not know the students as well as the teachers did. On the other hand, they were often very clear about which GLO a given museum exhibit or activity lent itself to, e.g. when one of the museum professionals said that “Enjoyment\(^2\) always boosts learning” and followed this statement with examples of students whom he had noticed were enjoying themselves when they were doing some of the museum’s hands-on activities such as archery, handling Viking weapons and trying on chainmail shirts.\(^3\)

As I was just as interested in the teachers’ and museum professionals’ learning at that of the students, the interview guide included several questions about their learning and about what they got out of the collaboration with the other institution. These questions were not only based upon the collaborative practices I had observed at e.g. partnership and cluster meetings, but also on what I had read about Etienne Wenger’s concept of communities of practice.\(^4\) I asked the teachers and museum professionals many questions about the similarities and dissimilarities between the two institutions as learning environments, and about how their own work was different from that of their partner from the museum or school. If there was more than one teacher or more than one museum staff member involved in the collaboration, I asked the interviewee if he or she learned anything new about his or her colleague(s). I also asked both groups of interviewees if they had discovered anything new about the students while they were working at the museum. The teacher’s response typically had to do with being positively surprised by noticing that a

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\(^1\) SWOT is an acronym from strengths, weaknesses, opportunities and threats. A SWOT analysis is “a study undertaken by an organization to identify its internal strengths and weaknesses, as well as its external opportunities and threats.” Oxford online dictionary

\(^2\) GLO4 is Enjoyment, Inspiration, Creativity.

\(^3\) See Table 10.19, Appendix All Tables

\(^4\) Wenger’s theories have been mentioned several times already. See Chapter 8 below for a thorough presentation of Wenger’s concepts and models.
During the data-collecting phase, the quantitative and qualitative data were acquired independently of each other, meaning that neither form of data had precedence over the other nor informed the other significantly. The connection between the two types of data-collection was the content of the questions, as explained above. However, in the analysis and interpretation phase, the qualitatively generated data from the interviews were given primary status. The reasoning behind this was that analyzing the interviews provided me with an in-depth understanding of the respondents’ thoughts, opinions, emotions and experiences regarding the topics of the interview. The findings of the analysis of the quantitative data were used to support or question the research findings from the analysis of the qualitative data.

All of the data are depersonalized, i.e. pseudonyms are used for all interviewees, museum programs, organizations and localities. This is in keeping with “Responsible research procedures” outlined in The European Code of Conduct for Research Integrity.

4.4 Coding

In this sub-section, the process leading up to establishing which categories to use when coding the interview data is described. I attended an NVivo course, where I used the transcripts of two interviews from the pilot study as a way to learn how to use the NVivo software. On the QSR International website, NVivo is presented as “software that supports qualitative and mixed methods research. It lets you collect, organize and analyze content from interviews, focus group discussions, surveys …” I used the program mainly as an electronic filing system in which to code my data; I uploaded all the transcribed interviews into the NVivo program and then coded them according to one set of categories for the students and one for the teachers and museum professionals. For example, I coded against the GLOs, using the five categories to categorize both negative and positive

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1 These two forms of data collection and analysis are called QUAL-QUAN and QUAL -> quan, respectively, the former indicating equivalent significance between the two, the latter that the quantitative data “assist in the interpretation of the qualitative findings.” Hesse-Biber (2010), pp. 68-71 [quotation from p. 71]
2 European Science Foundation (2011), p. 14
3 NVivo homepage
4 See Fig. 4e and Fig. 4f, Appendix Chpt. 4 which contain the codes I used for coding the interview transcripts of the interview students and interview adults, respectively.
learning outcomes within each. For each of the GLOs, which denotes a “positive learning outcome”, there is a corresponding “negative learning outcome”, e.g. when the interviewee described an experience as causing frustration, anger, indifference, boredom or inattentiveness, the learning outcome was a “negative” GLO3 (Attitudes and Values) or GLO4 (Enjoyment, Inspiration, Creativity) and was coded as such. Coding against the GLOs was used for the interview data originating from interviews with students, teachers and museum professionals.

However, the GLOs comprised only one portion of the categories under which the interviews of this study were coded. How one codes one’s interview transcripts determines more or less what one sees and, this being so, also what one does not see. So it is necessary to step back and review the development of my coding method including the theories that motivated my choice of coding method.

In order to work with data revealing the opinions, emotions, attitudes etc. of an adult from both types of institution, the interviews of a museum educator, Dean, and a head teacher, Holly, from the Shoresby pilot study were chosen. Of course, this meant that what I discovered from this work would be applied to the responses of the adult interviewees, not the students.

The Dean and Holly interviews were two of the first interviews I did, and they were long and rambling. Coding them was undertaken with a relatively open mind on my part, as I was interested in letting the interviews “speak to me” and present me with ideas about:

1) what to look for in later interviews I conducted with a teachers and a museum professionals as well as the group interviews with students;
2) how to go about future interviews; what did these two interviewees find important to relate to me and how could this inform the questions of my next interview guides?

Thus my ambition was to work inductively, more or less complying with the Glaser and Strauss’ ideal of “constructing analytic codes and categories from data, not from preconceived logically deduced hypotheses.”

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1 This is in good keeping with Hesse-Biber’s prompt to check for “negative cases,” which are e.g. interview responses that deviate from the others and therefore do not seem to “fit.” Hesse-Biber (2010), p. 90
2 Charmaz (2006), p. 5
code one’s data with a *completely* open mind. However, according to Kathleen Eisenhardt¹, “as close as possible” is sufficient: “theory building research is begun as close as possible to the ideal of no theory.”² As mentioned, this was my ambition at the outset of coding the two pilot study interviews from Shoresby.

During the process of coding, it became clear that there were a number of changes that must be made to both how the interviews were conducted and to the interview guide itself. The interview guide was too loosely structured and worded, and the interviewees were allowed to meander off course too often, resulting in very long transcripts containing too much extraneous and repetitive data.³ Nevertheless, the operation of coding them produced a workable set of codes.

As the coding progressed, some of the codes began “to assume the status of overarching ideas or propositions that [would] occupy a prominent place in the analysis.”⁴ They organized themselves logically into larger chunks of similar content, which eventually became these four main categories *Collaboration, Ideas for the future, Learning, and Museum and School Education*. Each of these categories harked back to the focus of my Ph.D. and my research questions; they also became the focus areas of my interview guides for teachers and museum professionals.⁵

*Learning* in the sense of meaning-making is the pivotal conceptual axle around which the entire study revolves. Students, teachers and museum professionals are the interviewees and informants; teachers and museum professionals constituted the partnership whose *Collaboration* took place in and to a certain extent meshed the two communities of practice – *School and Museum education*. In this meshing or interface, meaning-making was generated for students, teachers and museum professionals. An ambition of the Ph.D. is to present findings that can be used by museums and upper secondary schools to develop their educational and collaborative practices aimed at offering young people meaningful learning experiences that derive from both learning environments. This made *Ideas for the future* also a significant category.

To sum up, the resultant main categories of the coding process, though carried out with as open a mind as possible, clearly mirrored the purpose of my research. So in that

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¹ Kathleen Eisenhardt is the Stanford W. Ascherman M.D. Professor at Stanford University
² Eisenhardt (1989), p. 536
³ However, it can be argued that this type of interview resembles normal human dialogue, where digressions and non-sequiturs occur regularly.
⁴ Lofland (2006), p. 201
⁵ Fig. 4d, Appendix Chpt. 4
respect, the questions I prepared and asked and the subsequent responses could be seen as having a constitutive effect on how the data was coded, a strategy which seemed at least as deductive as it was inductive.

In order to treat all the harvested data consistently, I made the decision to work on the basis of a fixed set of codes. These codes grew partly out of what I had learned from the pilot case, and partly from what turned up when I started coding the next interviews. In other words, the content of the new interviews, which had been carried out on the basis of a revised interview guide, also influenced how the final set of codes turned out. Of course, eventually this meant re-coding the pilot-case against the “new” codes I was using.

Another argument for working in this way was that the GLO system works with fixed codes; emulating this process with the other codes and data was a way to strengthen the coherence and validity of my research. As Hesse-Biber points out, the qualitative data that are generated in e.g. two open-ended dialogic interviews can be very dissimilar. Using a set of fixed codes allowed me to extract, analyze and compare what e.g. the teachers remarked about their students’ group work at the museum, which, depending on the content of the coursework and how it was structured, might have displayed very different learning outcomes.

The five GLOs also comprised the categories or codes for coding the students’ interviews in NVivo. I added two more categories to the students’ codes: “School learning compared to museum learning” and “Hodge-podge”. The former of these two is self-explanatory; the latter was for statements by the students that did not fit any of the other six categories but offered viewpoint that at the time I considered might be useful.

The codes chosen for the teachers and museum professionals fell into four main categories: 1) learning (teachers and museum professionals); 2) learning - GLOs (students); 3) learning environment; 4) collaboration (including SWOT). A fifth code was Researcher’s influence. Each of these categories had several sub-categories, which actually comprised the codes I used when working with the data material.

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1 Hesse-Biber (2010), pp. 80-81
2 These responses were typically coded as GLO2 Skills, pertaining to the students learning or honing social skills in their group work
3 This code does not appear in the Tables containing the condensed data from the transcripts (Appendix All Tables) as my influence on the interviewees proved insignificant in relation to the analytical focus and findings.
4 See Fig. 4e, Appendix Chpt. 4
After the interviews were coded, two sets of data were produced by means of an NVivo Coding Query, one based on the students’ and one on the teachers’ and museum professionals’ interview responses and organized by case. Each set contained all the codes pertaining to students, and teachers and museum professionals, respectively, sorted by the individual members of each case. E.g. the code GLO 1 under Westby – Students contains all the statements by the Westby students that were coded as GLO 1.

From these two sets of data, and as a means of condensing the data into manageable chunks, the essence of each interviewee’s response was extracted, abbreviated and translated and used as the basis for the qualitative analysis of the cases in Chapters 9 to 13. This process involved active interpretation on my part in order to determine what the essence was and what was not. To indicate that the data at this point were no longer the interviewees’ own words, the pronouns that appear were changed from the first person to the third person.

Further condensation was performed when relevant in the analyses of the cases; this process was, again, based on an interpretation of the data.¹

4.5 Using Wenger's theories, concepts and models
Originally, I had thought to use the concepts and models developed by Etienne Wenger in conjunction with his theory of communities of practice as an analytical approach to the research data deriving from my interviews with teachers and museum professionals. During a Skype conversation with Etienne Wenger himself² in which I told him about my research and what I hoped to discover, his comments and responses made it clear to me that both concepts and models could also be used when working with the data from my interviews with the students.

Wenger’s concepts and models are used to work with the data generated from the interviews in the five cases, specifically in relation to analyzing the collaboration between teachers and museum professionals and what – if any – learning occurred when the boundaries between the two communities of practice (museum and school) were crossed.

¹ The interview data exist in three, increasingly derivative or interpreted forms: 1) the transcripts of the raw data; 2) the data generated by the extraction of the essence of each interviewee’s responses (in English and to be found in Appendix All Tables) and 3) when relevant, the data condensed in ultra-short form (to be found in the relevant chapter appendices.) NB: The text generated from the coding query in the NVivo program, which sorted each of the interviewees’ data into the coding categories, is not presented. This text, which is identical with the text of the transcripts, was sorted into the same categories as the tables in Appendix All Tables.
² See the Skype interview with Etienne Wenger, Appendix Chpt. 8.
How did they view the collaboration and what did they feel that they had learned from working in this partnership? As mentioned earlier, it was not possible to observe partnership meetings in all five cases. Hence, the main focus of the analysis using Wenger’s concepts and models is on how the teachers and museum professionals recalled their collaboration and field notes are only used as supplementary data.

It is important to make clear that I had some knowledge of Wenger’s theory about communities of practice before I interviewed the teachers and museum professionals of the five cases. At this early stage of my acquaintance with his theory, what especially struck a chord with my own experience was his description of the learning that is generated when people cross the boundaries of their own community of practice to interact with people in another community of practice. At intrface partnership and cluster meetings during the intrface project, teachers and museum people had often remarked on how interesting it was to get to know each other’s organization. Consequently, in the preparation of the interview guides for teachers and museum people, I formulated questions intending to discover how these two groups of people experienced their collaboration and what, if anything, they had learned from it. Using Wenger’s theory, of which I now have a more thorough knowledge, in the analysis of the data from these interviews represents an analytical process of theory-practice-theory that is similar to the one outlined earlier.

The researcher and intrface

The fact that I was the originator and project manager of the intrface project during the three years it was externally funded means that I am very familiar with it. Thus I conform to Kvale’s definition of “a good interviewer” [who] “is an expert in the topic of the interview…”

Hesse-Biber explains, “…We should always remain cognizant of the fact that our values, attitudes, and biases play an important role in determining 1) what questions we ask or do not ask, 2) what type of data we collect, and 3) the type of method, analysis, and interpretation that shapes our understanding of the research problem.” Professor Kathy Charmaz, Sonoma State University, points out that as researchers, “We are a part of the world we study and the data we collect” and that our interpretations are influenced by our past and present experiences with the people we interact with in our research.

1 Kvale (1996), p. 147
2 Hesse-Biber (2010), p. 30
3 Charmaz (2006), p. 10
4 Ibid.
In the course of the *interface* project, I became aware that there might be a causal relationship between partnership collaboration within the *interface* concept and students’ learning experiences at the museum, and this thinking is reflected in the research questions of the PhD project. The online surveys and the interview questions were formulated with a view to discovering if there is such a causal relationship. Using the GLOs and Wenger as tools to analyze the data is a way of introducing objective measuring and interpretative devices into the research process.

### 4.6 Summing up – Methods

Collecting quantitative data by means of online questionnaires and qualitative data by means of one-on-one or group interviews constitutes an approach commonly taken in mixed methods research. The wording of the online questionnaires grew out of the pilot study and was also based on the GLO templates and guidelines found on the MLA website. The pilot study was also the testing ground for how to carry out interviews with students, teachers and museum professionals. The process ranging from the initial considerations regarding the goals of my investigation to the analysis and interpretation of the harvested data adhered to the seven stages of interviewing outlined by Steinar Kvale. Coding the interview data followed the recommendations of Kvale and Hesse-Biber and was carried out in the NVivo program. A coding query in the program sorted each of the interviewees’ responses according to the coding categories. The resulting text was condensed¹ and translated into English, and became the tables which are presented in Appendix All Tables. Some of these data were condensed even further into chunks of significant data to be used as illustrative figures in the dissertation, presented in the chapter appendices.

Using the GLOs as a common thread in the online surveys and interview guides, as categories in the coding of the student interviews and in the further analysis their interview responses was a way of drawing comparable data sets out of the students’ varied recollections of their learning experiences. This practice is recommended by Hesse-Biber²; doing so allows me to ascertain whether questions of similar content yield similar responses, which increases the validity of the findings. This practice also allows me to discover if the quantitative and qualitative responses point towards the same underlying issues.

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¹ Kvale (1996), pp. 193-196
² Hesse-Biber (2010), p. 66
The GLOs and other categories developed for coding the teachers’ and museum professionals’ interview responses are also used in the same way. Etienne Wenger’s theories regarding learning and communities of practice are not only used to analyze and interpret the teachers’ and museum professionals’ collaboration but also, when relevant, to explain and understand the students’ recollections of their learning experiences in a “foreign” learning environment.
Chapter 5: Cultural-political and educational-political context

In keeping with Hesse-Biber’s mixed methods research design and the interpretative methodology I employ, I must also account for the landscape within which the “lived experiences”1 of the people of my study were played out. In this section, I will give a general introduction to upper secondary schools and museums, respectively. This is to illuminate the context in which intrface developed and the cases of the present study unfolded. After each brief introduction, I go into more specific detail about certain aspects of both institutions which are particularly relevant to the intrface concept and their collaboration.

A further illumination of the context of intrface is a brief presentation of the 2007-2008 cultural and educational strategies of Central Denmark Region. The intrface project was funded by Central Denmark Region because the project complied with most of these strategies.

5.1 Upper secondary schools

Upper secondary schools in Denmark2 prepare students for further education. There are four different upper secondary education programs that specifically target upper secondary education: STX, HTX, HHX and HF. The STX program is a general upper secondary education, HTX offers the higher technical certificate, HHX provides the higher commercial certificate and the HF program offers a higher preparatory degree. Curriculum requirements are national, issued by the Danish Ministry of Education, as are all official regulations and educational guidelines concerning how to implement the curricula. There is a certain degree of uniformity in the four programs, especially regarding how they are structured, e.g. in A-, B- and C-level subjects and multi-subject coursework, how examinations are organized, e.g. oral, written and group examinations, etc. There are also certain similarities as far as the range of subjects is concerned and even a degree of homogeneity in the content of these subjects, so that all four education programs ensure a certain level of general education. Examples of this are Danish, History and languages. However, the range of subjects and subject content is slanted according to the focus of the program, i.e. STX and HF programs offer a wide range of subjects in humanities, natural sciences and social sciences, the HTX program emphasizes technical and scientific subjects

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1 Hesse-Biber (2010), p. 17
2 For more information on the upper secondary school system, see the Danish Ministry of Education (n.d. A) and “Fact Sheets”, the Danish Ministry of Education (n.d.B)
combined with general subjects and the HHX program accentuates business and socio-economic subjects along with foreign languages as well as general subjects. There are admission requirements at all four types of upper secondary school and an applicant can be required to take an admissions test if the lower secondary school he or she attended recommends this.

5.1.1 The Upper Secondary School Reform 2005

In 2005, a reform of the four upper secondary school programs was implemented which radically changed these programs. Another reform, the Structural Reform of the Public Sector, implemented on Jan. 1, 2007, also caused fundamental change to upper secondary schools. In this sub-section, I describe three areas of change that are relevant to this study.

A. The first is how the introduction of compulsory multi-subject courses, in which subjects are clustered in trans- and cross-disciplinary coursework, has affected students’ work and teachers’ work. Since the Upper Secondary School Reform, students do different types of multi-subject coursework every year of their gymnasium education, e.g. in STX, the Danish-History paper, general language understanding and a natural science program in the first year of their studies as well as the specific discipline called Multi-subject coursework all three years as well as papers and exams in their specialized study program, which is made up of three subjects. All these types of multi-subject courses necessitate using special teaching methods and, for the students, new ways of working with subjects. Moreover, new methods of evaluation and examination have been implemented to comply with such coursework.

The Multi-subject coursework in the STX program, for example, has as its main objective “strengthening the pupils’ preparedness for further study. This includes the ability to apply knowledge and methods from several subjects to illustrate interdisciplinary themes and problems.” Preparing, teaching and evaluating multi-subject coursework has changed teachers’ work routines. Teachers are forced to collaborate with other teachers in order to plan and organize coursework that lives up to the requirements of this discipline. In order to teach students how to “apply knowledge and methods from several subjects”, teachers have to familiarize themselves with the theory, method, practice and syllabi of subjects.

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1 For a short description of the reform, see “Reform of upper secondary education”, the Danish Ministry of Education (n.d.C)
2 “Strukturreformen”, Den store danske encyklopaedi (online) (n.d.)
3 The Danish Ministry of Education (n.d.B)
other than their own. They also have to find a theme or problem to use as the topic of the coursework which is broad enough so each of the participating disciplines’ methods etc. become visible and can be applied in an authentic way.

Multi-subject coursework is slotted into the school schedule by the school’s administration; the appropriate number of lessons are set aside, and they are normally bundled so that the students have anything from half days to a whole week at a time to concentrate on the coursework. This makes it possible for the teachers involved to organize field trips and visits outside the school for their students, activities which teachers often choose to do without in single-subject disciplines with only one or two lessons on different days in the week.

Most of the multi-subject courses students do within all four programs have similar ambitions and are planned and organized along similar lines.

The pedagogical, academic and schedule-related changes that the Upper Secondary School Reform brought about have fundamentally altered the way subjects are viewed by students. From working almost exclusively in single-subject units, slotted one after the other into a relatively unvaried time-table, students now juggle two or three disciplines at a time, learning how to distinguish the theories and methods of one from those of the others and how to apply them properly and effectively to a given theme or problem. Students are expected to learn to reflect and meta-cognate about academic disciplines and their own learning. Their work takes place within a fluid time-table that often changes on a weekly basis.

In conclusion, compulsory multi-subject courses have changed the way students and teachers work, how time-tables are organized and the way teachers collaborate among themselves and make use of external learning resources. The coursework in three of the five cases in this study is multi-subject.

B. The second is how the student body at upper secondary schools has changed as a result of this reform and other government initiatives and reforms. Almost at the same time and in the years immediately after the Upper Secondary School Reform, there was a series of initiatives launched by the government, in collaboration with various political parties, which were targeted at increasing the percentage of young people in a year group to

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1 Since their implementation in 2005, the effects of the reform have been evaluated on an ongoing basis by EVA, the Danish Evaluation Institute. As a consequence of EVA’s evaluations, some adjustments have been made to the different types of multi-subject coursework. One such evaluation regarding the multi-subject discipline was undertaken in 2013. EVA (2013)
complete some form of secondary education. The latest of these initiatives was launched in 2011 in the Government Platform of the government at that time, the so-called “95%-Resolution”\(^2\). The goal of the resolution was that by 2015, 95% of a year group was to have completed or be enrolled in an upper secondary educational program. In other words, more and more students are entering upper secondary schools, challenging the pedagogical and didactic methods traditionally utilized by these schools. Classes are comprised of students from a wider variety of social and cultural backgrounds than earlier.\(^3\) An example is the number of students of foreign extraction. According to statistics published on the website of the Danish Ministry of Education\(^4\), 9.2% of the students that were expected to graduate in 2013 were of foreign extraction, corresponding to about 4,200 students, which was an increase of 4.4% compared to 2000, when only 4.8% of the graduates were immigrants or the children of immigrants. The initiatives to increase the number of young people completing an upper secondary school education are working. Approximately 46,000 students were expected to graduate from an upper secondary school program in 2013, which is about 4,000 more than in 2012 and more than 13,300 than in 2008.\(^5\)

Another reform that has contributed to the above-mentioned heterogeneity of the student body at upper secondary schools is the Structural Reform of the Public Sector. One of the results of this is that STX and HF schools have become self-governing institutions and are responsible for their own finances. Block grants are transferred to the school mainly through the so-called “Taxameter system”; the size of these grants depends on a series of quantifiable parameters, e.g. the number of students enrolled at a school as well as the number of students who graduate. Because of this system, schools compete with each other to attract as many students as possible. Moreover, there is a risk that

\(^1\) Regeringsgrundlag (2011), p. 19
\(^2\) My translation of “95-procent-målsætning”, The Danish Ministry of Education (2013A)
\(^3\) The Danish Evaluation Institute published a report in 2012 followed by a brief in 2013 about how students’ social background plays a role in their academic success, comparing their grades before and after the Reform with a special focus on multi-subject coursework. Of the different types of multi-subject coursework, projects and exams, only the specialized study project of the STX program still shows a significant difference in grades depending on the social class of the students. Students from the lowest social group do poorer on this exam. EVA (2012A) and the brief: EVA (2012B)
\(^4\) The Danish Ministry of Education (2014A)
\(^5\) Ibid.
\(^6\) The Danish Ministry of Education (n.d.E)
schools might become too lenient regarding student truancy and academic evaluation in order to keep the students in school and make sure they graduate.  

To sum up, the reforms and government initiatives outlined above have resulted in more students attending all four kinds of upper secondary school. Furthermore, due to the “taxameter system”, school leaders are making an effort to attract more students to their schools and keep them there. More students means more heterogeneous classes, which necessitates teachers utilizing new differentiated pedagogical and didactic teaching methods.

C. The third is the fundamental changes that have taken place at management level at upper secondary schools as a result of the Upper Secondary School Reform and the effects it has had on schools’ disciplinary and pedagogical framework and content. As was indicated in A. and B. above, multi-subject courses have changed school life for students and teachers alike and consequently, management at all four types of upper secondary schools has had to adapt itself to these new conditions. The reform did away with the traditional concept of teaching as being an individual endeavor taking place in a classroom behind a closed door. Teaching has been redefined as being a joint undertaking where teachers collaborate to produce the best possible learning environment for their students. In fact, a key goal of the reform was to create close ties between teachers’ teamwork and their students’ understanding of the benefits of cross-disciplinary collaboration and work. Teachers now work in formally organized teams that are required to plan lessons jointly according to the students’ syllabus of study. The reform provides a flexible framework for the principal of the school to organize the teachers’ teamwork. He or she decides what teams to appoint and outlines their tasks though it is up to the team to organize how these tasks are to be carried out.

Another factor that played an important part in obliging school management to professionalize and re-define their activities and duties was the above-mentioned structural reform. Especially for STX and HF schools, this reform had far-reaching consequences

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1 Jyllands-Posten, a national newspaper, sent out a survey in May 2010 to twenty teachers at every STX school in Denmark with the purpose of discovering whether they felt pressured to let unqualified students pass exams, give unwarranted grades or give credit for missing assignments. 1,153 teachers responded. Every sixth teacher admitted to giving unqualified students passing grades in different situations. 43.3% of the teachers said that they generally felt pressured to push as many students through the education as possible. Of these teachers, 69.5% specified the taxameter system as being the reason for their feeling pressured to do this, and 43.5% indicated that they had been pressured by school leaders. Jyllands-Posten (2010)

2 EVA (2011A), p. 30
because the schools were assigned self-governing status. A self-governing school is managed by an independent board of directors, it has a charter that describes the purpose of the institution and the framework for its activities and operations and it has capital and assets separate from the Danish Ministry of Education. Many areas of responsibility have been transferred to school leaders, and schools are evolving from having a flat organizational structure toward having a three-tiered management comprised of teams of teachers at the lowest level, a middle level comprised of management support functions, and the principal him- or herself at the top level. According to a study published in 2012, school leaders see human resources / staff management, strategic planning and the school’s pedagogical and educational development as their most important responsibilities. They see their board of directors as a significant resource that makes valuable contributions to the management of the school by way of e.g. the members’ economic, strategic and organizational experience and knowledge as well as their contacts in the community.

According to the study, school leaders think that another very important task is to observe and correctly interpret political, cultural and social trends in the local community and society at large in order to position the school favorably and mold its development strategically. Another important task is to enter into strategic collaborations with other educational institutions.

To sum up, school management is changing fundamentally in order to meet the challenges and changes of the two reforms in 2005 and 2006, respectively. First, for all upper secondary schools disciplinary framework and content changed due to the emphasis placed on cross- and trans-disciplinary education. Secondly, now these schools are all self-governing institutions, and due to the way they are funded (“taxameter system”), school leaders must run their schools in a more businesslike manner, thinking strategically.

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1 HTX and HHX schools have been self-governing schools since the early 1990s, so for these schools, the structural reform did not have such radical consequences. See “Forsker: Der skal mere ledelse til i gymnasiet”, EVA (2011B)
2 The Danish Ministry of Education (2006)
3 EVA (2012C), pp. 21-22. This is an evaluation report focusing on leadership at STX schools following the Reform in 2005 and the Structural Reform of the Public Sector in 2007.
4 According to the evaluation report of 2012, school leaders found planning the teachers’ workload to be their most difficult task due to the system of hourly rates specified in the agreement with the teachers’ union. (Op.cit., p. 11). This challenge has since been resolved as the Collective Settlement of 2013 (called OK13) did away with hourly rates for different types of activities.
5 Op.cit., p. 10
6 Op.cit., p. 11
7 Ibid.
competitively, economically and, of course, about how best to develop and provide their core product, education, e.g. by collaborating with other institutions of learning.

5.1.2 Sub-conclusion – Upper secondary schools

For the development and growth of the intrface project and later its establishment as an association, the changes brought about by the Upper Secondary School Reform were advantageous. Museums lend themselves very well to multi-subject courses: they are sites of learning, they foster curiosity about themes and problems, they offer a learning environment that contrasts and complements school learning, they offer an abundance of themes and problems that are relevant to a wide variety of subjects, students meet and learn from other academic experts besides their teachers, objects and works of art foster different learning experiences compared to e.g. book learning, thereby enabling other learning styles to flourish. Moreover, multi-subject courses make it more feasible to take students on field trips because lessons in the participating disciplines can be bundled consecutively. Multi-subject courses have also necessitated teachers’ collaborating across disciplinary borders and familiarizing themselves with each others’ subjects. New teaching methods must be developed and brought to use. The students not only learn about how best to apply the different subjects to a given theme, they also learn about collaboration from seeing their teachers work with each other as well as with the museum professionals.

On a different level, the Upper Secondary School Reform in 2005, the Structural Reform of the Public Sector in 2007 and other government initiatives have changed the make-up of the student body, not only increasing its numbers but also variegating its cultural and social profile. Consequently, school leaders and teachers have had to re-think didactic methods and pedagogical tools, differentiating lessons to match the students’ needs. Using museums as a learning environment is one way of accommodating students with different learning styles.

The reforms have also changed the face of management at upper gymnasiums. The increased complexity of running self-governing schools has led to its professionalization and hierarchization. School leaders are supported on the one hand by mid-level officers and teacher teams and on the other by their school’s board of directors. They must run their schools in a businesslike manner, taking the community around them and society itself into consideration when planning how to develop the school and its education most strategically and pedagogically. Working in partnership with a local museum to produce coursework and teaching material is a way of living up to several of these expectations.
5.2 Museums

The Danish Museum Act\(^1\) divides museums into three categories: Cultural history museums, natural history museums and art (history) museums. According to the wording of the act, cultural history museums are to document and illuminate the changes, variation and continuity in people’s living conditions from prehistoric times until the present. Art museums are to document and shed light on the history of art as well as its contemporary expression and also its aesthetic and epistemic dimensions. Natural history museums document and illuminate nature, its development, present environment and correlation to mankind.\(^2\)

According to the website of the Danish Agency for Culture, at the beginning of 2014, there were 104 museums in Denmark.\(^3\) Six of these museums are state-owned museums and 98 are state-subsidized museums.\(^4\) Nearly 11.5 million people visited Danish museums in 2012\(^5\), grossing upwards of DKK 1.9 billion.\(^6\)

In the following section, focus is directed to the Structural Reform of the Public Sector in 2007, which both reflects and heightens the process of re-structuring and streamlining the museum sector.

5.2.1 Transformation of the museum landscape

In 2006, there were 140 museums in all,\(^7\) and at present there are 108. The sharp decline in number can be attributed to the Structural Reform of the Public Sector, which transformed the municipal and district landscape of Denmark. 271 municipalities were amalgamated into ninety-eight, and all thirteen county council districts were dismantled and replaced by five regions. Municipalities increased in size from an average of 19,000 inhabitants to an average of 55,000 inhabitants; increasing the size of municipality population was one of the

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\(^1\) Museumsloven (2006), and the amendments which were put in effect Jan. 1, 2013, Lov om ændring af museumsloven (2013)

\(^2\) This is an approximate translation of §4, §6 and §8 of the Danish Museum Act (my translation).

\(^3\) These 98 museums are covered by the Museum Act. These museums must comply with the Act and are regularly inspected by the Danish Agency for Culture. The Danish Agency for Culture (2014) According to the white paper, there are approximately 600 other museums in Denmark which are not covered by the Act and are therefore not inspected, the Ministry of Culture (2011), p. 10.

\(^4\) Ibid.

\(^5\) Statistics Denmark (2013A)

\(^6\) According to the report, the gross income of 110 state-subsidized museums amounted to DKK 1,944,218,205: In other words, the estimated amount of DKK 1.9 in gross income for 2012 is conservative. The Danish Agency for Culture (2011A), p. 4

\(^7\) The Ministry of Culture (2011), p. 13
main purposes of the reform as it had become increasingly difficult for small municipalities to be responsible for and manage specialized service functions.¹

According to the Museum White Paper published by the Ministry of Culture in 2011, a very marked effect of the structural reform was that many state-subsidized museums merged into larger, more economically and professionally sustainable organizations.² Many other constituent factors contributed to this development, which is still in process today. The following examples give a clear picture of the conditions under which museum have been functioning for the past several years.

The financial crisis meant that municipalities, which are museums’ main financial contributors, have fewer funds to allocate to museums. Consequently, they have become more critical about getting a return on their investment, focusing on museums’ performance regarding e.g. attracting tourists to the area, creating national and international publicity, attracting and profiling sponsors from private enterprises, and acting as educative institutions and working with schools at all levels, etc. These many expectations can be met more easily if there is enough professionally trained staff at the museum to be put in charge of doing so. Collaborating closely with other museums or actually merging to create larger museums are both ways of securing sufficient staff to perform these various tasks.³

The increasing critical focus which the Danish Agency for Culture directs at museums’ standards of performance as set down by the Museum Act is communicated to the museums by means of individual quality assessment reports. These make it clear that some often small museums do not live up to the compulsory standards of performance⁴, e.g. the stipulation that a state-subsidized museum must carry out and publish research of an academic standard comparable to PhD level research. Pooling their resources by merging into larger entities makes it possible to retain an active researcher or even maintain a research department.

A final example is the increasing competition from other operators within the experience economy such as fun parks and zoos, which also spurs museums to join forces. According to a survey published by the Danish Agency for Culture in 2005, 71% of the

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¹Den store danske encyklopædi (online), (n.d.)
² A number of museums merged before the Structural Reform of the Public Sector, e.g. Odense City Museums, which is comprised of seven divisions (previously museums in their own right), five of which joined forces as early as 1997. The Danish Agency for Culture (2011B), p. 13. Another example is the Museum of Southern Jutland, which has more than fifteen divisions that were amalgamated in 2006 (see Museum Sønderjylland website)
people and 68% of the businesses who participated in the survey believed that cultural heritage is a resource that contributes positively to community development.\(^1\) 92% of the people and 83% of the businesses asked believed that cultural heritage resources attract tourists.\(^2\) In other words, there are high expectations which museums can exploit and especially so if they work together or actually merge.\(^3\)

To sum up, museums are in the middle of a far-reaching process of change. They have been forced to adjust and adapt to radical external changes caused by the Structural Reform of the Public Sector. Concurrently with this, forces at governance level of the cultural sector itself have put pressure on museums to transform themselves into more modern, competitive, inclusive, internationally oriented “businesses”, where the director and his or her board of directors are expected to run the museum in a fashion similar to businesses in the private sector.\(^4\)

### 5.2.2 Two inter-related key action areas for museums: education and young people

Over the past ten years, the Danish Agency for Culture has launched a number of far-reaching initiatives aimed at optimizing and professionalizing the museum sector. In this study, it is relevant to look more closely at initiatives within museum education, specifically targeted at young people attending upper secondary schools. Quality assessment results, a white paper on museum education, user surveys and various reports and publications communicate clearly that 1) young people rarely visit museums voluntarily and 2) many museums are rarely or never visited by upper secondary schools. The Agency’s Dissemination Plan, 2007-2013, aimed to improve museums’ dissemination and education products and activities in general, and supported museums’ efforts to develop these products and activities by making funding available. In the following, the background for and continuing supervision of the Dissemination Plan, specifically in relation to optimizing museums’ offerings to upper secondary schools, are presented briefly, as this comprises the context and motivation of the intrface project and now the intrface association, including the five cases of this research.

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\(^1\) The Danish Agency for Culture (2005), p. 4  
\(^3\) Internationalization and technological development are other factors pressuring museums to think innovatively and in some cases to choose amalgamation as an effective means of amassing sufficient size and expertise to meet the challenges. The Ministry of Culture (2011) pp.13-14.  
Since 2004, the Danish Agency for Culture has carried out quality assessments of more than 98 state-subsidized museums in Denmark.¹ A quality assessment is the cornerstone of the Agency’s museum supervision and guidance provisions, and the resulting report is a valuable tool for the Agency and a given museum to use when planning improvement strategies and communicating about them with the museum’s financial backers, the most important of whom is typically the local municipality. Standards of performance as stipulated by the Museum Act constitute the framework of the quality assessment, i.e. how the museum carries out its duties regarding its area of responsibility.²

If the quality assessment of a given museum reveals that it is not fulfilling all of its duties, the Agency notes this in the report and the museum is given three months to demonstrate how it will remedy the problem.³ All quality assessments are available on the Agency’s website but because of their individual character and their rather disparate structure and form, they are not useful as a means of creating an overview of the strengths and weaknesses of museums.⁴

In 2005, a committee was appointed and charged with carrying out a thorough review of how successfully all state-owned and state-subsidized museums lived up to the standards

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¹ There is a short description, in Danish, of Quality Assessments on the Danish Agency for Culture website. The Danish Agency for Culture (n.d.B)

² An example of an area of responsibility: “By means of collection, registration, preservation, research and dissemination within its area of responsibility, the museum works towards securing Denmark’s cultural heritage and illuminating its circumstances and changes in Art History. The museum’s area of responsibility is artistic works produced by [the artist] and his family, his friends, students and role models as well as relevant art and artistic genres which were especially practiced by these people (church art, arts and crafts, water color and graphics)”. This is a translation of the official area of responsibility of the Brigby Art Museum (the museum’s name is a pseudonym, so there is no link to the museum).

³ The Danish Agency for Culture (n.d.B)

⁴ The assessment reports for this study’s four case museums are quite different in appearance, structure, length, attention to detail and focus. E.g., in one of the four case museums’ quality assessment reports (from 2010-2011), the Agency points out that young people are underrepresented in the given museum’s user group and that the museum does not have sufficient educational offerings for upper secondary schools. Then the museum is instructed to develop a course of action to set these issues right. In two of the other three case museums’ assessment reports (from 2007 and 2008, respectively), the Agency notes that the museum in question has teaching material and coursework for elementary schools; upper secondary schools are not even mentioned and no instructions are given to the museums to develop teaching material for upper secondary schools. The fourth assessment report (from 2008) mentions and praises the museum’s educational programs for and collaboration with upper secondary schools. In other words, in these four assessment reports, there is a disparity in focus regarding the museums’ educational offerings for upper secondary school students. This seems odd in view of the fact that since 2007, a key action area of the Danish Agency for Culture has been museums’ educational programs and material for young people.
stipulated by the Museum Act regarding dissemination and education.¹ The committee’s findings were published in a white paper², on the basis of which the Ministry of Culture launched seven initiatives specifically targeted at improving museums dissemination and education. An annual sum of DKK 40.5 million was allocated to fund these initiatives.³ The funds were earmarked for different types or categories of museum projects within the seven initiatives.⁴ From 2007 to 2013, there were five key action areas within which museums can apply for funds once a year: 1) Development of museum dissemination activities; 2) educational activities at museums; 3) research into museum dissemination and education; 4) user surveys; 5) international knowledge and experience exchange and qualifying continuing education. Every year, the Agency published guidelines regarding applications for these funds, and within key action areas 1) and 2), which were especially relevant in relation to interface and consequently, this study, a qualifying factor for museum projects was that they aimed at strengthening the museum experience for young people (key action area 1) or developing the museum’s educational programs for upper secondary schools (key action area 2).⁵

In 2009, the Danish Agency for Culture published the findings of an online questionnaire that had been sent out to 130 state-owned and state-subsidized museums in the early spring of 2008.⁶ The purpose of the survey was partly to shed light on how museums understood learning and implemented educational practice, partly to illuminate

¹ This was a result of the government platform “New Goals” of 2005, Regeringsgrundlag (2005). Among other initiatives, New Goals launched “Access to our cultural heritage”. The Ministry of Culture (2006B), p. 15. The minister of culture appointed the so-called “Formidlingsudvalget”, which can be roughly translated to “Dissemination Committee”, who published a white paper on museum education in April the following year. (ibid.) The committee’s mandate was i.a. to investigate and clarify circumstances pertaining to museums’ dissemination activities and educational programs. Op.cit., pp. 16-17.
² The Ministry of Culture (2006B)
³ On August 25, 2006, the Ministry of Culture announced in a press release that DKK 40.5 million per year would be made available for museums to apply for and to use to improve the quality of their dissemination activities and education programs. The Ministry of Culture (2006A) According to the Danish Agency for Culture’s website, these funds amount to DKK 41.2 million per year, from 2007 until 2013. The Danish Agency for Culture (2007)
⁴ The seven key action areas in 2006: 1) Development of museum dissemination activities; 2) support for galleries’ dissemination of international contemporary art; 3) research into museum dissemination and education; 4) continuing education and training; 5) museums and education; 6) user surveys; 7) knowledge and experience sharing concerning dissemination projects. (my translation) The Ministry of Culture (n.d.)
⁵ A few of the guidelines are published on the website the Danish Agency for Culture. The Danish Agency for Culture (2013B) Earlier guidelines can be googled.
⁶ The Danish Agency for Culture (2009A) Concurrently with this publication, the Agency produced a booklet containing best practice examples of museums’ educational programs for primary and secondary schools. The Danish Agency for Culture (2009B)
the challenges facing them in relation to professionally managing and developing their educational potential in the 21st century. The survey’s findings concerning a) museums’ offerings to upper secondary schools and b) how many classes from upper secondary schools visit museums are important in the context of interface and this study. For example, the survey showed that while 9% of the museums in Denmark were visited by more than fifty classes from upper secondary schools, 77% were only visited by one to ten classes per year and 14% did not receive visits from upper secondary schools at all. Percentages of this sort made it clear that this was one of the museums’ areas of responsibility where there was room for improvement.

On the basis of the survey findings, the Agency produced a list of nine recommendations, seven of which are accordant with interface activities and therefore relevant to this study:

1) Museums should formulate a set of concrete objectives for their educational activities and include them as part of their dissemination strategy.
2) Museums should strengthen their collaboration with elementary schools, upper secondary schools, teachers’ colleges and universities about the development of their (the museums’) educational activities.
3) All museums should offer educational material and programs to both elementary schools and upper secondary schools that comply with the schools’ curriculum and programs of education.
4) Museums should develop digital learning resources that supplement their educational activities at the museum.
5) Museums should develop a practice of systematic evaluation of their educational activities.
6) Museums should develop and draw attention to their potential as study and information resources for students doing school projects.
7) Museums should develop their offerings to teachers regarding how they can be used as a learning resource and a supplement to their teaching. (note on next page)

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3 These recommendations are very similar to the twelve objectives for museum learning presented in The Learning Power of Museums, Department for Culture, Media and Sport (2000), pp. 8-9. The DCMS report was also part of the background for the development of the GLOs, see Chpt. 7 below.
Concurrently with this publication, the Agency produced a booklet containing best practice examples of museum educational programs for elementary and secondary schools.

Another important instrument used by the Agency is the National User Survey, which was carried out for the first time in 2009. All museums in Denmark participate in this survey, which maps out the demographics of each museum’s audience, establishes user satisfaction in relation to the museum’s core services as well as users’ visiting habits and learning routines. Each museum receives an individual report containing the results for the museum in question as well as a report with the combined results of the survey. Museums can use this information to work professionally and strategically with their dissemination policies and educational programs, basing their actions on systematically collected data about their users.\(^2\)

All of the user surveys have shown that there is a marked underrepresentation of young people among museum guests.\(^3\) For example, according to the 2012 User Survey, young people still only make up 15% of the users at museums, although they make up 23% of the entire population.\(^4\) 15% is a 3% increase compared to 2009, which indicates that the initiatives launched by the Agency have had a positive effect on museums’ efforts to attract young people.\(^5\)

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\(^1\) Op.cit., pp. 14-15. The last two recommendations are: a) Museums should develop their trainee service for teachers’ colleges and universities; b) By means of collaborations with universities, museums should strengthen research that elucidates museums’ learning potential. (My translation) The present study is in accordance with the latter recommendation. 

\(^2\) The Danish Agency for Culture (2012C), p. 3.

\(^3\) The fact that young people are underrepresented among museum guests is not exclusive to Danish museums. In international surveys and reports, there is some variation regarding how young people are defined as an age group in relation to children and adults, but the general conclusion is that teenagers and young people in their twenties are not common guests at museums. Gibbs, Sani and Thompson identified two barriers that kept young people from visiting museums, namely that they perceived museums as being for children or older adults and they felt intellectually intimidated by museums. Like Danish museums, museums in many countries have acknowledged this problem and have taken steps to solve it. Gibbs (2007)

\(^4\) It is important to remember, however, that the Danish Agency for Culture defines young people as being 14-29 years of age, which constitutes a much larger number of people and the 15 to 20-year-olds, who attend upper secondary schools. The Danish Agency for Culture (2012C), p. 7. In a Ministry of Culture press release on April 22, 2014, it was announced that the percentage of young people visiting museums had risen from 12% in 2009 to 16% in 2014. inffece and Learning Museum were credited for having contributed to this increase, The Ministry of Culture (2014)

\(^5\) Various other surveys and the ensuing publications confirm and qualify the findings of the user surveys. The Danish Agency for Culture commissioned a qualitative case study involving three small cities (Randers, Odense and Roskilde) where the researchers carried out focus group interviews with young museum-goers, telephone interviews with young non-museum-goers, individual interviews with museum directors or museum educators at museums in these cities as well as at a natural history
5.2.3 Sub-conclusion - Museums

As far as *intrface* is concerned, the changes brought about in the museum landscape were conducive to its growth. Museums recognized the opportunity to live up to several of the expectations and demands formulated by their local community and municipality, the Danish Agency of Culture and the Ministry of Culture by forming partnerships with local upper secondary schools, developing and implementing educational coursework and material with teachers from those schools, etc. Large museums had several staff members who could participate in the collaboration with the teachers. Within the *intrface* family and via the *intrface* website, museums could collaborate with each other and share their knowledge and experiences regarding e.g. *intrface* activities. They became more active in the community, profiling themselves as alternative learning environments in the media coverage of their projects with their partnership schools. The number of classes from upper secondary schools visiting museums obviously rose. Furthermore, the work done by museums in the *intrface* project and subsequently in the *intrface* association is in line with nearly all the Agency’s recommendations in its publication about museums’ learning potential.¹

5.3 Central Denmark Region

A third framework or context of the *intrface* project (2008-2011) is Central Denmark Region (CDR hereafter), which came into existence as a result of the Structural Reform of the Public Sector in 2007. There are five regions in Denmark, and CDR is the largest geographically (13,142 sq.km.) and the second most heavily populated (1,273,814 citizens per July 1, 2013). The regional council is located in Viborg and like its four sister regions, CDR is run by forty-one elected regional councilmen.⁴ The main responsibilities of each

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¹ The Danish Agency for Culture funded the museums’ participation in the *intrface* project. Each museum matched the funding allocated by the Agency on a one-to-one basis.


³ Statistics Denmark (2013B)

⁴ The Ministry of the Interior and Health (2005), p. 40. The Municipality Reform and the Structural Reform of the Public Sector are the same thing.
region are the administration of its health services, the operation of certain social institutions and regional development.¹

The Regional Development Plan 2008 for CDR outlines the region’s vision and goals for its development within the following areas: Business, development and tourism, working capacity and employment, education, health, culture, nature and environment, energy, infrastructure and public transport.² In relation to CDR’s decision to back the *interface* experiment financially, the plans for culture and education merit a brief account.

Regarding CDR’s strategy for the development of education, the official administrative basis for allocating funds was targeted institutions that provided general and vocational secondary education and adult education. The Regional Council was empowered to grant funds to projects that e.g. developed compulsory and elective subjects or more specialized study programs. Projects that advanced collaboration between two or more institutions, schools and / or business enterprises were given preferential treatment, as were projects that strengthened educational activities in the more thinly populated areas of the region, projects that were original and innovative and / or were internationally oriented.³ There were also two stipulations that potential projects would have to follow in order to be approved: There had to be several sources of funding and the projects results had to be recorded and disseminated to relevant circles.⁴ The *interface* project complied with all of these demands, e.g. each school matched the funding allocated by CDR and the Danish Agency for Culture funded the museums’ participation in the project.

Regarding CDR’s strategy for the region’s cultural development, an official administrative basis was adopted at the council meeting on October 22, 2008,⁵ which i.a. outlined a set of seven guidelines, one or more of which potential projects had to follow in order to be considered for funding.⁶ Four of these are especially relevant in relation to the *interface* project: 1) projects that activate and make use of already existing knowledge in new areas or in new ways or projects; 2) projects that establish networks focused on developmental activities; 3) projects that communicate new knowledge to networks within and across relevant professional fields; 4) projects that are limited in duration and that work towards establishing a permanent educational and eventful offerings.

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¹ Op. cit. p. 26
² Central Denmark Region (2008), p. 3.
³ Region Midtjylland (2007), p. 1
⁴ Op. cit. p. 3; All seven of the guidelines are listed on this page.
⁵ Region Midtjylland (2008), p. 3
⁶ Ibid.
5.3.1 Sub-conclusion – Central Denmark Region

The *interface* project complied with most of the items on the guidelines and the stipulations of the administrative basis for CDR’s educational and cultural development strategies. Local urban and rural museum-school partnerships and a museum-school network were established right across the region, museum staff members and upper secondary school teachers became familiar with each other’s professions, elective and compulsory subjects were provided a new environment in which to unfold, disciplinary knowledge was applied in novel ways, conferences, cluster- and partnership meetings ensured the sharing of experience and knowledge among project participants, coursework results were shared online, articles were published in relevant journals, progress reports were turned in to CDR faithfully every six months, a permanent association of fee-paying members evolved out of the project, etc.

5.4 Summing up – Cultural-political and educational-political context

The turbulent times experienced by both museums and upper secondary schools, which were caused by radical reforms and changes in legislation in both sectors, resulted in new economic and market conditions along more commercial lines for both institutions, necessitated the professionalization of leadership in both institutions, required the revision and to a certain extent (re-)invention of institutional organization and inter-institutional collaborations, focused attention on and spurred the formulation of new innovative, cross-disciplinary and cross-professional strategies, etc. Add to this the emergence of the regional councils, who were determined to succeed as the replacement for the county councils. The educational and cultural development strategies at institutional, regional and national levels set the stage for the *interface* project and later the *interface* association.
Chapter 6: Empirical basis

In this study, two of the upper secondary education programs are represented: four STX schools and one HHX school. The subjects that were involved are Danish, History, Chemistry, Innovation, Mathematics, Physics, and Multi-subject coursework. Three cultural history museums and one art museum, representing two of the three museum types, are included in this study.

There are forty-nine interviewees in all: twenty-nine students (seventeen girls, thirteen boys), twelve teachers (nine women and three men), eight museum professionals (two women, six men).

Approximately 250 students from twelve classes in all completed the coursework developed by the partnerships in the five cases of this study. Eight of these classes are represented in this study. There is one class from Westby Gymnasium & HF, one class from Shoresby Gymnasium, two classes from Cranwell, two classes from Hammersby Gymnasium & HF and two classes from Brigby Gymnasium & HF.

Six of the eight classes (not Shoresby and not one of the two classes from Hammersby) filled out the online pre- and post-survey questionnaires. Eighty students filled out both online questionnaires; their responses comprise the quantitative data of this study.

There are field notes for four of the five cases. These field notes originated in my observation of students’ work at the museum, teacher-museum professional interaction at the museum, student presentations and partnership meetings. Unfortunately, it was not possible to carry out the same number or type of observations in all five cases. The field notes provide very useful supplementary data. Photographs also function in this way.

6.1 Presentation of the pilot study – Shoresby Gymnasium and Shoresby Museum

The Shoresby Gymnasium - Shoresby Museum case is different from the other four in that it originally functioned as a pilot study. The teachers collaborating with the museum kindly

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1 In the English version of the website of the Danish Ministry of Education dealing with The Gymnasium STX, a multi-subject course is explained thus: “...Parts of the instruction are implemented as multi-subject courses within the framework of general study preparation, general language understanding and a natural science basic programme.” The Danish Ministry of Education (n.d.B)

2 This is explained 6.3 below.

3 The pilot study was presented in a research article in 2011 entitled “Things are more alive at the museum” – an upper secondary class at the museum (““Det er mere levende på museet” – en gymnasieklasse på museum”). In the article, Falk’s and Dierking’s Contextual Model of Learning was
consented to let me use their class and themselves as “guinea pigs” in my ongoing effort to produce viable interview guides and questionnaires. The museum director and the museum educator were likewise accommodating. Although the interview guides that I used in my interviews with the teachers and museum professionals in this case are slightly different to the ones I ended up using in the other four cases, the interview dialogue in the pilot study covers the same ground as that of the other adult interviews. Consequently, I have chosen to view these interviews as research material on the same terms as those of the other cases.

Similarly, the interview questions I asked the students in the pilot study, though in fact greater in number and variety, elicited answers and sparked dialogue of comparable content to that of my interviews with the students of the other cases. As with the teachers’ and museum professionals’ interview responses, I have chosen to include my interview with these four students as research material on the same terms as the student interviews in the other four cases.

The greatest difference between the pilot study and the other cases is that the students were not given online questionnaires before and after their work at the museum. They were, however, asked to answer a series of questions about their knowledge of and attitude toward museums in general and Shoresby Museum in particular. They were also asked about what they expected their learning experience at the museum would be like. The content of the latter questions was based on the GLOs. Shortly after they completed the coursework, they were given another set of questions to answer, which i.a. contained the same GLO-based questions, now in the past tense. The thinking behind this was that their answers would reveal how their recollection of their learning experience measured against their expectation of it.

These two questionnaires are very different in form and slightly different in content to the online questionnaires (pre- and post-survey) used for the students in the other cases. Therefore I have decided not to include the pilot study pre- and post-questionnaire responses as data comparable to the other students’ online responses.

To sum up, the pilot study serves two purposes: 1) It helped me streamline and focus my online questionnaires and my interview guides and gave me practical experience in interviewing people, and 2) the data collected in the interviews are comparable with the

used as the theoretical framework for the analysis of the students’ learning experiences at the museum. Thorhauge (2011)
data collected in the four other cases and therefore can be used for analysis and interpretation on equal terms with the data collected in the four other cases.\(^1\)

**6.2 Brief presentation of the cases**

There are five cases but four locations, as two of the collaborations took place in the same city, namely Shoresby. Two of the four locations are situated in Central Denmark Region, one in the Region of Southern Denmark and one in North Denmark Region. Shoresby and Brigby are both in Central Denmark Region. Shoresby, numbering 55,253 people\(^2\), is the third largest city in Eastern Jutland. The town of Brigby is inland and numbers 38,261 citizens\(^3\). Ashton, in North Denmark Region, is the smallest of the four, numbering 8,071 people\(^4\). It is also an inland town in a rural setting. Westby is in the Region of Southern Denmark, and numbers 71,491 people\(^5\), making it the largest city of the four.

The five cases are designated by the name of partnership to which they belong:

- Shoresby Gymnasium – Shoresby Museum (hereafter Shoresby)
- Cranwell – Shoresby Museum (hereafter Cranwell)
- Hammersby Gymnasium & HF – Hammersby Museum (hereafter Hammersby)
- Brigby Gymnasium & HF – Brigby Art Museum (hereafter Brigby)
- Westby Gymnasium – Coastal Museums (hereafter Westby)

There is a brief description of the school, the museum, the partnership, the adult interviewees, the students the coursework and my participation of each case and these descriptions are presented in the Appendix Partnership Introductions and Field Notes. The descriptions of the coursework are largely based on the material the partnerships themselves produced during and after their collaboration, e.g. what was uploaded to the intrface website.

The cases are different from each other in multiple ways. For example, Brigby stands out in that the two teachers whose classes I observed did not actually collaborate with the

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\(^1\) As explained earlier, the interviews of the pilot-case were re-coded in NVivo with the same codes as the four other cases.

\(^2\) Statistics Denmark (2013C)

\(^3\) Ibid.

\(^4\) Ibid.

\(^5\) Ibid.
Tammy, the museum educator.¹ Brigby is moreover a special case because a teacher from Brigby’s first year of partnership was interviewed but no students from his class were interviewed. This teacher collaborated with Tammy, who continued at the museum the following year and therefore appears as an interview person. In order to be consistent with the other cases, analytical focus as far as Brigby is concerned is on the teachers and students – and the museum educator – who were involved in undertaking the second year of “collaboration”.

6.3 Selection and recruitment

6.3.1 The selection of the partnerships
The selection of the partnerships for research was undertaken on the basis of six criteria: institutional type, the age of the partnership, the location of the partnership, the size of the museum, the grade the students were in and the subject(s) of the coursework. The reasoning behind this was that the partnership cases should reflect the partnerships of interface as much as possible so that the research findings would have a certain degree of transferability, not only to other interface partnerships but also to upper secondary schools and museums in general.

As far as upper secondary schools are concerned, the transferability of the findings should be relatively straightforward. Such schools are quite similar, even across the four different types, concerning mission, organization, academically trained staff, professional and legal premises and conditions, type of interaction with the world around them and user group. In other words, the schools that comprise one half of the case partnerships “look like” all other upper secondary schools, so teachers and management at these schools should easily be able to recognize the results generated from an analysis of the data collected from students and teachers.

Museums, on the other hand, comprise a rather heterogeneous group and are different from one another as regards e.g. their areas of responsibility, their personnel and their user-groups. Although all state-subsidized and state-owned museums are bound by the same law, their very different individual areas of responsibility influence their public image and self-perception. Moreover, museums’ personnel typically display a composite set of professional skills. Furthermore, despite the fact that the typical museum-goer in Denmark

¹ Due to its significantly different characteristics as a case, Brigby is used as a basis for comparison with the other four cases. This is explained at the beginning of Section III.
is a fifty-plus, well-educated woman, the user-group of one museum can be quite different from that of another, e.g. technical museums, contemporary art museums, Viking museums and geology museums appeal to different types of visitors, and the type of visitor a museum has contributes to the museum’s public image as well as its self-image. The findings of the present study should nevertheless be readily applicable to museums in general based on the fact that the museums in the case partnerships also reflect similar differences.

Furthermore, the six factors used as selection criteria are also objectively verifiable, making it easy to compare e.g. other coursework to the case coursework, one’s own museum or school with a case museum or school.

*Institutional types*

Two of the three types of museums are represented, an art museum and three cultural history museums, and two of the four types of upper secondary schools are represented, four STX schools and one HHX school. Of the thirty-nine member museums in the *interface* association, there are twenty-five cultural history museums, thirteen art museums and one natural history museum. Of the forty member schools, there are thirty STX schools (of which eleven are also HF schools, one offers the HTX program and one offers the HHX program), eight schools offering either HHX or HTX programs, or both, one teachers’ college and HF and, finally, one HF school for adults. In other words, the distribution of institutional type in the cases more or less reflects the distribution of institutional types in the association.

*The age of the partnership*

The age of a partnership was gauged by how many years the partnership had existed and / or how many times those particular museum staff members and teachers had

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1 “She is 55 years old, lives in the Greater Copenhagen area and is a school teacher. She visits a museum more than four times a year, preferably an art museum and as a rule in the company of friends or acquaintances.” (my translation) The Danish Agency for Culture (2012D)
2 Two of these schools (Brigby and Hammersby) also offer the HF program. However, no HF classes were involved in the *interface* coursework at these schools.
3 There are four museums and five schools because one museum – Shoresby Museum – collaborated with two different schools, Shoresby Gymnasium and Cranwell.
4 At the time of writing
5 There are more member schools than museums. Four museums have more than one partner school while only one school works with two different museums. Furthermore, there is one school and two museums without partners. See “partnerskaber” on the *interface* website.
6 For the sake of comparison, in all of Denmark there are 140 STX schools, 118 schools that offer the HF program, sixty-three HHX schools and fifty schools that offer the HTX program. The Danish Ministry of Education (2014B, 2014C, 2014D and 2014E, respectively)
collaborated within the \*interface\* concept. The ages of the partnerships ranged from five years to one. Naturally, how well museum staff members and teachers knew each other was proportionate to how much experience they had had in working together and even though a partnership had existed for more than one year, new people could have entered the partnership’s next collaboration, meaning that \textit{their} collaboration was new for them. This was the case in four of the case studies, i.e. there was a mixture of “old-timers” and “newcomers”. It was only Westby, where the partnership AND the teacher and the museum educator collaborating within it were new. In each of the four other cases, one or more of the interviewees from the museum had either been in charge of and/or participated in an \*interface\* collaboration earlier. In one case (Shoresby), one of the two teachers who were interviewed had previous experience in working with the partner museum; otherwise all the teachers in all the cases were newcomers.

\textit{The location of the partnership}

The Shoresby, Cranwell and Westby partnerships are located in relatively large cities, the Brigby case is in a large town and the Ashton case is in a smallish town.\footnote{For the size of each town’s population, see the relevant Appendix Partnership Introductions and Field Notes.} Schools’ opportunities for collaborations with other learning environments can be limited in smaller towns, which perhaps renders an \*interface\* partnership attractive from the outset.

The distance between the museum and the school might also have had an influence on e.g. how practicable and / or time-consuming it was for students to travel back and forth between them, which might have influenced their perception of the coursework. In the five partnerships of this study, distances vary from just across the street to almost four km.

It was also important in the selection of the case partnerships that they were located in the three regions where \*interface\* is active. Of the five partnerships, three are located in Central Denmark Region, one in North Denmark Region and one in the Region of Southern Denmark. This more or less corresponds to the distribution of the total number of partnerships in the three regions.\footnote{According to the \*interface\* website, at the time of writing, there are twenty-seven partnerships in Central Denmark Region, eight in the Region of Southern Denmark and five in North Denmark Region.}

\textit{The size of the museum}

The four museums vary in size in many ways e.g. the number of buildings they own and / or occupy, the visitor facilities they offer (e.g. café, restaurant, reading room, etc.), the number of visitors they receive per year, the number of full-time academically trained
personnel on their permanent staff, the geographical area they serve, their budgets and expenditures, etc. The number of full-time academically trained employees on a museum’s permanent staff who were or could have been involved in *inrface* coursework varied from two employees to seventeen.¹ The various criteria chosen to establish museum size are interrelated and very dependent on many external influencing factors, two of which are the Danish Agency for Culture’s funding policies and the configuration of the municipality’s cultural affairs committee, which allocates funds to the museum.

*The grade of the students*

The grade of the students refers to how many years the students had attended the upper secondary school. All three year groups were represented in the cases, and there were more 1st year students than 2nd and 3rd year students. There were eighty-eight 1st year students, twenty-two 2nd year students and twenty-nine 3rd year students.² This corresponded roughly to the distribution of 1st, 2nd and 3rd year students in general who had done *inrface* coursework.³ 1st year students are finding their feet socially and academically in their new school, 3rd year students know everybody at school and are old hands at dealing with upper secondary school curriculum. Such factors could have entered into how they viewed *inrface* coursework, which i.a. entailed leaving school and working in a different learning environment.

*The subject(s) of the coursework:*

When selecting the cases, I wanted to make sure that a wide range of subjects was represented preferably from all three areas of science: the humanities, natural science and social science.

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¹ The number of other museum staff members and volunteers also varies greatly, and as they sometimes interact with the students and their teachers in *inrface* coursework, it would perhaps be relevant to factor their number into the size of the museum. However, the employment practices of museums is very complex, mainly because so much of a museum’s funding is project-based; staff—academic or otherwise—are often hired in for special assignments on a temporary basis. E.g. museums whose area of responsibility encompasses archaeological work hire in archaeologists for specific excavations or other archaeological activities of limited time duration; municipalities sometimes refer long-term unemployed people to museums and subsidize their work there, swelling the number of the museum’s employees.

² See note that the quantitative data originate from only eighty students’ online responses, which corresponds to the number of students who answered both pre- and post-surveys.

³ A rough estimate of the proportion of all the students from 1st, 2nd and 3rd year, respectively, who have done *inrface* coursework is 65% 1st year, 15% 2nd year and 20% 3rd year. See the intrface website; click on “Partnerskaber” (Partnerships) in the left menu and see the coursework that has been uploaded. You must be logged in to see it.
The subjects of the case coursework ranged from a 1st year compulsory multi-subject course involving five subjects to a 3rd year single-subject A-level elective. Student motivation could have varied depending on what the subject was or if it was an elective or not, and might also have been influenced by how easily the student saw a connection between the subject matter and the museum he or she was visiting, e.g. students who have chosen art as a B-level elective might be more motivated to do coursework at an art museum than at a technical museum.

Another quantifiable condition that might prove significant is the number of students involved in the coursework, which, to a certain extent, also relates to the school subject (is it a compulsory subject or an elective?), the size of the museum and the distance between the museum and the school. However, this was not one of the criteria I included among the six as I did not know beforehand how many students would be doing the coursework in each case. In this study’s cases, the number of students doing coursework at the same time at a given museum varied from five classes (of approximately 25 students each) to one small class of eight. Although this was not a criterion for selection, it is dealt with in the analysis of two of the cases.

6.3.2 The recruitment of the partnerships

The recruitment of partnerships and interviewees happened over a long period of time. The process of recruitment was much the same for all of the cases though there were a few significant differences. In the following I explain the basic recruitment procedure and afterwards comment especially on deviations from this course of action.

In two cases, Shoresby and Brigby, I knew people from both institutions. In the Cranwell and Hammersby cases, I knew at least one of the people from the museum who were involved in the collaboration. In the fifth case, Westby, I did not know any of the people involved.

After introducing myself either in person or on the phone to the museum professionals or teachers who did not know me, the next step was to write to everyone, explaining what I wanted to do and asking each person if he or she would be amenable to being interviewed by me after the coursework had been completed. I also explained how long the interview would last and that I would send them an e-mail outlining what the interview would be about. I was very privileged indeed to receive positive replies from everyone.
I sent all the teachers an e-mail in which I explained that I wanted the *inframe* students to answer two online questionnaires, one before their work at the museum and one approximately a fortnight after. I explained the purpose of the two questionnaires and asked them to help me by setting aside time in their lessons for the students to fill out both questionnaires. All the teachers agreed to do this. I also asked the teachers if they would see if there were three or four students in their class who would let me interview them after their work at the museum. Once again, the teachers were obliging and with two exceptions, three or four students in each class volunteered to be interviewed. Regarding the two exceptions, the teachers in question urged three or four specific students to volunteer, making the degree of voluntariness somewhat less.¹

All the interviewees were informed beforehand that they would receive a transcript of the interview afterwards for them to read through and confirm as being what they said.

**Deviations from the standard recruitment procedure**

The recruitment of the Brigby case deviated slightly from the procedure described above in that it was organized through Harold and Tammy, the teacher and museum educator who had collaborated the first year of their partnership. I knew both of them and had talked about wanting to use their partnership as a case in my research. Beth and Heather, the two teachers whose collaboration with the museum and whose students actually became the Brigby case, were unknown to me prior to this study.

The recruitment of the Westby case did not follow the same pattern as the others. First of all, it was the manager of the *inframe* project who recommended the Westby partnerships to me. I had not considered them as a potential case. Secondly, he was the one who introduced me to Coastal Museums. This introduction was to the director of the museum, not to the people who would actually be involved in the collaboration. Although I sent the requisite e-mail to these people (teachers and museum employees), introducing myself and my project and describing how I hoped to interact with them and the students, and although their responses were positive and polite, it was not until I actually met them that I got a clear sense of their project and of how they viewed working together. In the collaboration involving Westby Gymnasium, these factors did not impede the development of a friendly atmosphere conducive to our interviews.

¹ In the interviews, it made no difference whether the interview students had volunteered or been encouraged by their teacher to participate in the interview.
Time was also an issue in the recruitment process. The timing of the recruitment process had an effect on the ensuing case study. In the Shoresby, Cranwell and Brigby cases and one of projects at Hammersby (Rethinking Ashton), the recruitment process was early enough that I was able to sit in on some or all of the partnerships’ planning meetings or to be present when the students were working at the museums. It was unfortunate that the Westby case, whose participants I knew the least, was also the latest of the cases, meaning the one that was most pressed for time. Furthermore, the preliminary meetings of museum people and teachers in the Westby case as well as in the first Hammersby project (Ring Fortresses) had already taken place before I started following them, which meant I had no firsthand observations of their collaboration. The coursework planned by the other potential case study in Westby (Westby Center School and Coastal Museums) was stretched out over several weeks, and this could not be changed. So in this case, the issue of time had an adverse effect as it meant their collaboration could not become part of my research.

All three groups of participants (students, teachers and museum professionals) in this study’s cases were characterized by their positive attitude towards their projects, though no more or less than those of other *intrface* partnerships.

### 6.4 Summing up – Empirical basis

The five cases that comprise the data source for this study were representative of the partnerships belonging to the *intrface* association concerning type of institution, partnership age, coursework subjects, year of study, size of the museum and location of the partnership at that time. The cases’ representativity ensures the transferability of the research findings to other *intrface* partnerships and to other upper secondary schools and museums and the collaborations that these museums and schools may have with other institutions.

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1. My study visit abroad (Oct. – Nov. 2012) complicated my communication with the members of the Westby case. My intention was to interview them via Skype, but that did not pan out, so the interviews had to wait until I got back. Furthermore, the teacher from Westby Center School did not respond to my e-mail requesting her to let her students answer the online post-survey. This was several weeks after the students had worked with the museum objects. Eventually, I decided that the collaboration between Westby Center School and the Ryeburg branch of Coastal Museums was too atypical to be used as a case in my research. Happily, it was feasible to do the interviews and online questionnaires in the other Westby collaboration (between Westby Gymnasium and the Westby Museum branch of Coastal Museums)

2. On November 27, 2012, I sent an e-mail to the museum employee who had worked with the teacher from the technical museum at Westby Center School. I told her that I would probably have to drop their collaboration as part of my research as it had not been possible to organize an interview with the teacher or to persuade her to let the students answer the post-survey online questionnaire.
The procedure for recruiting the partnerships as cases was designed to ensure that interviewees and informants (online surveys) were clear about all steps of the interaction between us, most importantly how their answers would be used and that their anonymity would be assured. Although this procedure was adhered to assiduously, the actual recruitment process was not identical in all the cases and in fact proved quite different in relation to one of the cases, Westby. As the recruitment procedure was set in motion several weeks or in some cases months before the online surveys and the interviews, it is my opinion that the procedural differences did not unduly influence the interviewees’ and informants’ responses.

The number of participants in the partnerships varied. Logically, this meant that in a partnership comprised of two people, the individual person exerted proportionately more influence on the collaboration than in partnerships with four or five members involved in the collaboration. Once again, this was not a factor that had any decisive influence on the nature or content of the answers given. What did play an important factor was the degree to which the individual had been involved in the collaboration, which becomes very clear in the analyses of the cases.

**Conclusion: Section I**

In this section, I have presented the research design of this study, which is a mixed methods design utilizing quantitative and qualitative methods and embedded in an interpretative paradigm. This design conforms to Sharlene Nagy Hesse-Biber’s recommended design for qualitative mixed methods research design and fits into the mixed methods process model.¹

Constructivist learning theory, upon which the GLOs are based, and social learning theory, out of which Wenger’s theory about communities of practice was born, are rooted in the overarching epistemology of social constructivism, which harks back to phenomenology. This, then, is the ontological source – “the assumptions about the nature of reality” – from which the epistemological standpoint of this study derives. The epistemological standpoint brought to bear in the study is social constructivism, which holds that the social world is created or constructed by individuals engaged in social interaction; consequently, there is a multiplicity of perspectives, and research within this paradigm endeavors to analyze and interpret how the individuals it is studying make sense

¹ Fig. 2b, Appendix Chpt. 2
of the world. Both qualitative and quantitative research methods can be utilized to this end, as is the case in this study, in which qualitative methods have been allocated the primary role.

I have adopted Hesse-Biber’s approach to mixed methods research and this chapter’s presentation of my research design, methodology, methods, outside factors (institutional context1), sample selection and recruitment data collection aligns itself with Hesse-Biber’s recommendations. The chapter’s structure follows the mixed methods model, starting with the theoretical framework at the “top” of the model and working its way “down,” ending with a description of the empirical data.

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1 See 5.4 Summing up
Section II Analytical Tools

Section II picks up where the previous section left off, namely a little further “down” the research design model. This section is made up of two chapters, 7 and 8, in which the analytical tools applied to the data are presented in detail.

Chapter 7: Analytical tool #1: The Generic Learning Outcomes

In this chapter, I will give a thorough presentation of the Generic Learning Outcomes, the method I have used in conjunction with the gathering, ordering and analysis of much of my data regarding Research question #1 “How is students’ learning affected by their participation in coursework in a museum learning environment and which has been developed and is implemented by teachers and museum professionals in partnership?”

As a method to discover students’ learning outcomes during and after their coursework at the museum, a set of measures was used that was developed for the express purpose of assessing how museums and other cultural heritage institutions impact on visitors’ learning. These measures are called Generic Learning Outcomes or GLOs. The GLOs were developed in 2001-2002 by the Learning Impact Research Project (LIRP) team led by the Research Centre for Museums and Galleries (RCMG) in the Department of Museums Studies at the University of Leicester in the UK. The LIRP team was commissioned by the Museums, Libraries and Archives Council (MLA) and collaborated with people in another project, Inspiring Learning Framework, which was developed by MLA.1

The main reason for the development of the GLO framework was to present decision makers and “funding bodies with evidence of the depth and extent of learning in museums, archives and libraries.”2 The GLO framework was launched as part of a large-scale drive to professionalize how cultural heritage institutions collected and demonstrated evidence of their value and used this evidence as a basis for applying for funding. In the introduction of the End of project paper, the LIRP research team wrote:

“Today, museums, archives and libraries are required to demonstrate their social value. Like schools, colleges and other educational institutions, they are asked to give evidence of

1 In her comments after reading the rough draft of this chapter, Dr. Ceri Jones, one of the people who developed the GLOs, wrote: “Originally, Inspiring Learning for All was described as a vision, supporting organizational change to put users’ learning at the heart of what museums, libraries and archives do. However, by 2008 it had been re-branded as a self-improvement framework.” Written correspondence with Dr. Ceri Jones, December 17, 2013
the learning they facilitate in users.” Common concepts of learning had to be found or developed and defined in order to generate a vocabulary or terminology which these institutions could use to ascertain and describe the experiences of learning that took place. By developing the GLOs, LIRP supplied museums, archives and libraries with such a language.

There are five GLOs. The GLO model is the illustration of the GLOs presented on the Inspiring Learning website. On the website page, each encircled GLO can be clicked on, and a window opens with examples of what each particular GLO encompasses.

Briefly about the understanding of learning behind the GLOs

LIRP and the people involved in the Inspiring Learning Framework project “worked closely together to develop and pilot the GLOs and all shared the same working definition of learning.” Learning was defined as “a process of active engagement with experience. It is what people do when they want to make sense of the world. It may involve increase in skills, knowledge, understanding, values, feelings, attitudes and capacity to reflect. Effective learning leads to change, development and the desire to learn more.” This definition leans against constructivist, experiential and aesthetic understandings of learning, which are fundamentally opposed to behaviorism and positivist science, which claim that learning outcomes are objectively measurable and that the learner is an empty vessel into which information external to the learner can be poured. Constructivist learning theory argues that learners construct knowledge and meaning on the basis of an interaction between their experiences and their ideas. Learning is viewed as much more than the mere passive acquisition of new knowledge; learners are active co-creators of their own learning. Learning is multi-dimensional and multi-sensory and involves multiple intelligences. It builds upon what the learner already knows, sometimes complementing it, sometimes

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1 Op.cit., p. 4
2 Op.cit. p. 6
3 See Fig. 7a and Fig. 7b, Appendix Chpt. 7, for the GLO model and the GLO list of definitions. The list of GLOs and their definitions is the same as the GLO “Checklist” available at Museums, Libraries and Archives Council (2008). For an even more detailed explanation of GLOs, click on ”More about the GLOs” on the same site.
4 Ibid.
5 Theano Moussouri in Monaco (2009), pp. 317-326. Pino Monaco is Director of Program Evaluation & Audience Research, Smithsonian Institution. Theano Moussouri is lecturer in museum studies at University College London.
6 Museums, Libraries and Archives Council (2008) According to Dr. Ceri Jones, this definition of learning was adapted from the Campaign for Learning, see the website at Campaign for learning.
7 See 3.1 above.
replacing it; it can be the result of conscious and actively sought-out experience or take place unselectively and in an open-ended, unfocused way.\(^1\) Learning experiences can have as their outcomes tacit and / or verbal knowledge. Furthermore, each individual has his own preferred mode of learning,\(^2\) and his learning is furthermore influenced by whether it is intrinsically or extrinsically motivated.\(^3\)

A learner-centered understanding of learning makes the objective measurement of “soft”\(^4\) learning outcomes difficult. Below, I offer a critique of the GLOs, and discuss the strengths and challenges related to applying them as a research tool. The concept of learning outcomes is explored more fully; the theory behind the GLOs is outlined and the GLOs are compared with European and Danish approaches to learning outcomes. Here we see that the understanding of learning articulated by the GLOs more than ten years ago and which was defined against the traditional, positivist approach to formal learning is now widespread in much of the literature concerning learning outcomes in formal education.

### 7.1 Regarding GLOs – strengths and challenges

Although my first reaction to the GLOs was that as a method for measuring learning outcomes was that they seemed rather fluffy, I sympathize with the GLO concept of learning, as well as its inherent understanding of the learner. A learner is viewed as an active, curious, reflective, social individual with a will and mind of her own and an innate desire to make sense of the world and to collaborate with others in this endeavor.\(^5\)

The GLOs do not measure learning objectively but rather how learners and, in this study, those who evaluate learners (teachers, museum staff) experienced the learning situation or process at the museum. According to LIRP’s End of project paper, museums are informal learning environments\(^6\) and as such cannot “make judgments about how much their users have learnt or how much progress they have made”, contrary to schools, as

\(^1\) See Guy Claxton’s theory describing learning as taking place on a continuum of focus, running from tight focus or spotlight focus to low focus or floodlight focus. Spotlight focus is selective and analytical; floodlight focus is unselective and open-ended. Claxton (1999), pp. 74-75.
\(^3\) Csikszentmihalyi (1999), pp.146-160
\(^4\) Hooper-Greenhill (2003), p. 6
\(^5\) This description fits the majority of the students I have had the pleasure of teaching in the course of my teaching career and, though perhaps less readily, most of the adults with whom I have collaborated.
\(^6\) Hooper-Greenhill (2003), p. 6
\(^7\) Op.cit. p. 11
formal learning environments. So in order to measure the learning that museum visits make possible, it is necessary to ask the user, or learner, himself. The learner’s learning outcome becomes synonymous with his experience of it.

Extensive research and piloting were carried out during the development of the GLOs and as early as 2004, they were used successfully as the framework for the research methods employed to evaluate twelve national museum projects in the UK. They are at present used as a planning and evaluation framework by a wide range of cultural institutions in the UK, and, to some extent, in Sweden and Norway.

In the present study, the GLOs were used as a tool to elicit answers (data), both quantitative and qualitative, and to code and analyze the data, in order to assess students’ learning outcomes, partly as these were experienced by the students themselves, partly as they were evaluated by the teachers and museum staff involved in the coursework.

In the course of my research and using the GLOs as described above, their strengths and weaknesses as a tool for gathering and analyzing data naturally became apparent. In the following, I summarize the most obvious of both their strengths and weaknesses.

7.1.1 Regarding GLO “Strengths”

Qualitative and quantitative data can supplement each other

Generally speaking, quantitative data show breadth, the qualitative data show depth, and when they are compared in conjunction with my research e.g. into how students changed their attitudes about museums after doing their coursework there, these data may complement each other and thus validate the subsequent interpretation, or they may deviate from each other, making it important to reevaluate one’s interpretation by digging deeper to discover the cause(s) of the discrepancy. Either way, the two types of data supplement each other and ultimately contribute to supporting a stronger, more valid interpretation. In this study, the GLOs were used to collect, code and then to analyze both types of data.

The GLOs provide a consistent framework and terminology for questions and analysis

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1 I discuss the concepts of formal, non-formal and informal learning environments in section 7.3 below.
2 Learning experiences and learning outcomes are often used interchangeably in this dissertation.
3 Research Centre for Galleries and Museums (2004), p. 8
4 Thus, in my research, the GLOs were used as they were originally intended. However, I also used the GLOs as the basis for the questions on the pre-survey questionnaire, where the students were asked what they EXPECTED to learn from doing the coursework at the museum. See 4.2 above.
Using a well-researched vocabulary to use for both online surveys and interview guides and for coding the interviewees’ responses ensures reliability and consistency in the research findings. In this study, the GLOs are in fact the connecting thread running through my research activities. All the respondents were asked questions based on the GLOs, and the GLOs comprised the categories against which much of the response material was coded.

_The GLOs provide a framework for comparative analysis of interviewees’ responses_

The interviewees’ responses were coded or categorized against the GLOs, and it is now possible to compare them, e.g. how students doing one type of museum-based coursework compare with students doing a different type of museum-based coursework, giving me an idea of difference in impact of the two types of coursework. So while individual experience and perception, context and setting were variable (e.g. STX or HHX, art museum or cultural history museum, number of teachers and museum staff members involved, age of students, etc.), the GLOs are not, which makes them well-suited as a framework for comparative analysis. An example of different perceptions was how Frederick and Mary from Beth’s class at Brigby Gymnasium responded to the first interview question about what they remembered best from the coursework at the museum. Frederick was the first to respond, and one of the things he remembered was the debate at the end of their visit, where two groups in the class were chosen to discuss a painting at the museum on the basis of the arguments they had formulated during their coursework. He said, "What I remember best was the debate at the end, where we had to use the arguments – in our own words – we had to use what we had learned … when you have to put it in your own words, I think that helps you learn.” (Frederick, who participated in the debate)

Mary’s response a little bit later was very different: "Well, more or less the same thing. And then, you know, I think that it was very confusing … also when we had to choose argument cards, because the arguments [we could choose] weren’t arguments that I would ever focus on … we had problems in our group finding out how to get things to make sense and relate them to the painting.”

While Frederick felt he had learned something from the argument cards and the debate, possibly because he had been in one of the two groups that participated in it, Mary was very confused by the whole affair. The argument cards almost seemed to have the opposite effect on her, causing frustration and problems in the group. Both of these
responses were coded as GLO2 (Skills). Frederick was able to do a new thing (use the arguments in a debate at an art museum) and that his communication skills were honed, which were two of the learning outcomes the exercise was meant to have. Mary did not understand how to use the argument cards, nor could she and her group work out how to apply these arguments to their painting, so she did not learn any skills from this exercise.

*Overlapping GLOs indicate significant learning*

In an interview situation, responses could often be “rich” or complex. When these responses were subsequently coded, they had to be categorized as more than one GLO. When such overlapping occurred, it indicated significant learning on the part of the interviewee. This learning could be positive or negative.

For example, Mary’s response (quoted above), which indicated frustration and confusion, was also coded as a GLO1 (Knowledge and Understanding) and GLO3 (Attitudes and Values). According to this quote, Mary’s knowledge and understanding were actually confounded, so the learning outcome was negative. She said that she and the group were not able to make links between (“relate”) the argument cards and the painting. As far as her attitudes were concerned, she expressed a negative attitude in relation to the experience of working with the argument cards.

Frederick’s response, on the other hand, indicated positive learning, e.g. that he had achieved a deeper understanding of learning when he said, “… when you have to put it in your own words, I think that helps you learn.” In other words, it was clear to see that his response also had to be coded as GLO1 (Knowledge and Understanding)

*The GLO framework constitutes a pedagogical meeting ground (interview situation)*

In Denmark, few museum people and even fewer upper secondary school teachers are familiar with the GLOs. However, teachers and museum people alike implicitly understood and could respond to the content of the GLO-questions I asked them though I did not necessarily explain about the GLOs per se.

Although they were developed to measure learning in cultural heritage institutions, the teachers of the case studies, all of whom work within a formal learning framework, recognized the GLOs’ relevancy as a vocabulary to use when discussing learning. This is not surprising, as the learning theory behind the GLOs also forms the basis of much pedagogical thinking in formal education.

It proved unwise to complicate matters by telling the students about the GLOs per se. When interviewing the students in the Shoresby case, I actually introduced each GLO and
showed them the GLO model, etc. The thinking behind this was that we would share a vocabulary when speaking about their learning. However, this reasoning proved unsound as the students were confused by being asked to use unfamiliar abstractions to talk about something as familiar to them as learning. It became apparent in their interviews that the students were quite capable of answering GLO-based questions about learning in their own words. GLO content was familiar to teachers, museum people and students though the terms themselves – in an interview situation – might be said to clutter the field.

In 2012, the Research Centre for Museums and Galleries in the School of Museum Studies at the University of Leicester commissioned an independent study to “uncover quantitative and qualitative evidence of the awareness, use and impact of the Generic Learning Outcomes on the museum sector in the UK.”¹ The ensuing report provides ample evidence of the strengths of the GLOs and the positive impact they have had; among these are that they help museums think about learning, they provide museum staff with a shared language to talk about learning, they support museum staff in developing and implementing outcome-based plans for exhibits, etc, and, importantly, they are used by museums in funding bids or to validate their work to existing funders.²

Compared to the findings of Jo Graham’s study, the present study offers a narrower perspective on the strengths of the GLOs, as they are used in a much smaller context (the five case-studies). Furthermore, in relation to this study, the GLOs are used to delineate learning by students carrying out planned coursework relevant to their school studies. The museums in Graham’s study used the GLOs in relation to all kinds of audiences visiting their institution for all kinds of reasons. However, it is interesting to note that the strengths I explain above align themselves with those mentioned from the Graham’s study regarding the content of the GLOs as a vocabulary or language that supports people in thinking and talking about learning.

7.1.2 Regarding GLO “Challenges”

In the following, two academic critiques regarding the GLOs are presented before I account for a few challenging aspects of the GLOs that I have encountered. According to Dr. Ceri Jones at the School of Museum Studies at Leicester University, one of the people behind the GLOs, the GLOs have not received widespread academic attention or critique as their development and implementation were part of a governmental initiative, targeted at

¹ Graham (2013), p. 4. Jo Graham is the founder and director of Learning Unlimited in Hampshire, the UK
heritage sites, libraries and archives, and not an academic enterprise meant for academia and presented in academic journals, etc. The priority at that time was to invent a relatively simple evaluation tool – the GLOs – that was easy and quick for the target institutions to implement; however, because of their simplicity, the complexity of the learning situation at a given museum or library is not always reflected in a GLO evaluation. In her remarks to me, Dr. Jones noted that as an analytical tool, the GLOs should be supplemented by other approaches to coding and by other learning theory. In the case analyses below, other learning theories are applied for this very reason.

Professor Stephen Brown’s critique

The first critique is Head of School at De Montfort University in the UK, Professor Stephen Brown’s article “A Critique of Generic Learning Outcomes”. Brown gives a brief introduction to GLOs, explaining that their development and rapid implementation in museums in the UK was a result of government policies which increasingly focused on museum performance as a criterion for receiving funding. Museums were seen as institutions that played an important role in government initiatives aimed at advancing lifelong learning. Visitor numbers did not provide evidence of how museums impacted on their guests’ learning, and the GLOs filled this gap.

Brown has two main objections to the GLOs; the second of which is a consequence of the first:

1) They do not measure learning directly but rather what the museum guests say about their learning or the learning of others.
2) They are a subjective system of measurement.

He goes on to say that because the GLOs are a subjective measure of learning, large numbers of respondents are necessary if the results are to be reliable. In order to procure sufficient numbers, it is expedient for museums to ask guests to answer the GLO question sheet after they experience a given educational program or have visited an exhibit at the museum. In other words, establishing whether or not an educational program or an exhibit inspires the visitor to learn is not discovered until after time and money were invested in producing them. Brown advocates a system which “maximise[s] return on investment” by

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1 Telephone conversation with Dr. Ceri Jones, mid-December, 2013
2 Written correspondence with Dr. Ceri Jones, December 17, 2013
3 Brown (2007), pp. 22-30
measuring probable learning outcomes before time and money are invested in developing the activity or program in question. As it is impossible to guess what the content of people’s learning will be after visiting e.g. a museum exhibit, Brown suggests shifting the focus from learning content to “user experience” or how the learner makes use of the learning content. He then advocates using University of London Professor Diana Laurillard’s “Taxonomy of educational media”, which divides the learning experience into five different categories and associates methods and technologies and media forms to each. According to Brown, doing this allows e.g. an exhibit designer to select a learning experience that best supports the exhibit he is designing, and then incorporate the method and media form associated with this learning experience into his design. This will make it possible for the exhibit designer to predictively assess the “likely learning effectiveness of any learning activity.” To my way of thinking, designing for the “likely learning effectiveness” of a learning activity does not make investments in exhibition design more robust. Surely predictions of learning experiences must go hand in hand with summative evaluations (e.g. by using the GLOs) to discover the learning impact of an exhibition or a design.

Dr. Lorraine Forman-Peck and Kate Travers

The second critique of the GLOs points out that they are very general in their approach and do not measure the definitive contributions museum learning experiences at a specific museum make to e.g. the mandated school curriculum of visiting students. “The GLOs could be experienced anywhere,” the article’s authors maintain, and, given the reasons for the GLOs’ development in the first place and the underlying learning theory, rightly so, because, as the authors say, “it is impossible and inappropriate to establish a baseline assessment of what a visitor can do or know before a visit.” The GLOs were not meant to be used as a measure of how or if museums’ learning impact aligns with school “curriculum and assessment”, although, upon closer scrutiny, they actually do as is explained in 7.3.1 and 7.3.3 below.

In the following, I present a few of the GLO “challenges” that I have encountered.

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1 Op. cit., p. 26
2 Op. cit., p. 29
3 Forman-Peck (2013), pp. 28-41. Dr. Peck is Honorary Research Fellow at the Dept. of Education at the University of Oxford. Kate Travers is a Learning and Engagement Specialist at Arts Museum Learning
4 I am grateful to Dr. Ceri Jones, the School of Museum Studies at Leicester University, for drawing my attention to this article.
5 Forman-Peck (2013), p. 35
6 Ibid.
7 Ibid.
It is difficult to quantify qualitative data

In the tutorial “Have a go at coding” on the MLA website, one is given suggestions about how best to code interview statements. According to the suggestions, it is clear that one should attempt to use only one GLO per statement and if one cannot choose which GLO fits the best, one should break the statement down into smaller sections, assigning one GLO per section.

- “Choose the GLO you think best suits the statement “
- “Some statements might contain evidence of more than one GLO - try to choose the GLO that you think is strongest or if that is not possible, break the statement down to identify both GLOs”

The second suggestion indicates that the people behind the tutorial were aware of how difficult it is to limit oneself to one GLO when coding transcribed dialogue from an interview. Many of the participants in the LIRP pilot cases were not used to thinking about learning, and according to LIRP’s End of project paper, this meant that they had trouble using the GLOs properly. “There were instances of multiple coding and mis-coding and some participants were worried about bias and subjectivity.” In my opinion, double or even triple coding is unavoidable if one is to take one’s interview responses seriously and as explained earlier, overlapping GLOs indicate significant learning.

People’s sentences are not limited to one unit of meaning per sentence; as was obvious in the very short quotes from my interview with Frederick and Mary, there is semantic coherence between the parts of a statement itself and between a statement and its context.

When Frederick said, “What I remember best was the debate at the end, where we had to use the arguments – in our own words – we had to use what we had learned … when you have to put it in your own words, I think that helps you learn,” removing e.g. the statement “What I remember best was the debate at the end” from its context renders it meaningless and impossible to code using the GLOs. There is no GLO to fit this statement. However, Frederick’s subsequent utterances add multiple meanings to the statement. Did he remember the debate because he had to use what he had learned or

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1 Museums, Libraries and Archives Council (2008) Click on the link “Practice your own coding” on the right hand side of the webpage.
3 See 7.1.1 above.
because he had to re-formulate what he had learned in his own words or because he realized that he learned best by using his own words in the debate? All three meanings are latent in the same sentences which makes it necessary to categorize them as being BOTH GLO1 (Knowledge and understanding) AND GLO2 (Skills).

Ideally, the purpose of coding the transcripts of the interviews against the GLOs was to be able to quantify how many times an interviewee said something that belonged to this or that GLO. If GLO4 cropped up very often and GLO1 hardly at all, perhaps it could be concluded that the interviewee’s learning outcome was mainly stimulated and facilitated by enjoyable, engaging activities but that these activities did not seem to result in his learning new information or deepening his understanding to any great degree. As the brief example above attests, however, interview dialogue and responses were ambiguous and had to be coded as such, which accordingly muddied the results of counting up the number of times this or that GLO appeared. Accordingly, the interview responses were not tallied and used as quantitative data in the present study.

The GLOs do not measure learning directly

GLOs are designed to discover the interviewee’s personal experience of learning, as can be seen in the questions from the MLA website template. This means that his answers are individual and subjective, making it difficult to draw general or objective conclusions about the learning impact of the given learning activity unless one has a large sample size of interview or survey responses. In an interview situation or when answering a questionnaire, people may be interested in projecting a positive image of themselves as learners, which may influence their answers. This may be especially so in a group interview with students who are attentive to and influenced by each other’s statements and reactions to statements and who possibly follow the lead of the first classmate who speaks or a classmate who is perceived as the “leader” of the group. Students (and teachers and museum professionals, for that matter) may also attempt to please me, the interviewer.¹

The overall picture of the interviewees’ learning may become skewed more favorably than the actual course of events merits, and this must be taken into account in an interpretation of the results of coding and analysis. A mixed methods research design as in the present study ensures sturdier findings because the object of research is studied qualitatively (in depth) and quantitatively (in breadth). E.g. very positive or very negative

¹ It is important to note that this is an issue common to interview-based research in general.
responses by interview students can be checked against the responses on the pre- and post-survey questionnaires.

**GLO5 - Appraisal of students’ future activities and behavior**

GLO5 (Activity, Behavior, Progression) has to do with open-ended learning outcomes, and the sub-categories reveal that what is being measured here is whether the learner has “progressed” and has changed or intends to change his “activity” and “behavior” as a result of what he experienced at e.g. a museum. When teachers and museum people were asked if they noticed any changes in the students’ behavior during or after the coursework at the museum, many of them could describe instances where they had indeed noticed a change. Especially the teachers were able to do this, of course. Knowing the students from class, the teachers already had an impression of what constituted the students’ normal behavior and noticed deviations from this behavior. However, both teachers and museum people could only really guess when asked if they thought the coursework would affect students’ future behavior or activity. Students’ answers to these questions were more informed, though still guesses. For example, on the online questionnaires used to gather data for the present study, the students were asked before and after they did the coursework at the museum to indicate how likely it was that they would use museums in connection with schoolwork or visit them in their spare time in the future. Their responses can be said to constitute informed guesses, as they were expressing their own opinions. Although, as informed guesses, their answers were inconclusive, comparing pre- and post-survey responses did give an indication of whether or not doing the coursework at the museum influenced their thinking about using the museum. Survey answers like these can be used to corroborate (or disconfirm) the qualitative data.

### 7.1.3 Summing up regarding the GLOs

As a research tool, the GLOs are useful because

- they can be used to gather quantitative and qualitative data
- they provide recognizable and relevant terminology and categories to use when formulating questions for interview guides and online questionnaires, and coding and analyzing responses

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1 Questions E3 and E4 on pre- and post-survey questionnaires
they provide terminology and categories that interface with learning theory having to do with formal and informal learning environments

The risk of using the GLOs is that they generate a lop-sided picture of learning which is too subjective. One way of minimizing this is to establish a large sample size. Another way is to use different methods of gathering data, e.g. field observations, interviews and surveys, as in the present study. A third way is apply other learning theory to the data. In this study, other learning theories are brought to bear on both qualitative and quantitative data as a way of strengthening their interpretation.

In the next section, the GLOs are placed in a wider context in order to illustrate how they compare with other learning outcomes as e.g. defined in reports and documents deriving from the Bologna Process and the European, UK and Danish Qualifications Frameworks. Special mention is made of considerations regarding learning outcomes for formal and informal learning settings, respectively, as these considerations were fundamental to the development of the GLOs. Brief mention is also made of the interface between the GLOs and the eight key competences for lifelong learning as defined by the European Union.

7.2 The political and institutional background and context of the GLOs

The mastermind behind Inspiring Learning for All was Sue Wilkinson, the director of Learning and Access at Resource: The Council for Museums, Archives and Libraries (MLA). In 2002, Resource developed a new learning and access framework for the three domains called Inspiring Learning for All. Among the many initiatives launched by MLA

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1 In the present study, due to the sample size of the survey responses, the quantitative data are used as supplementary data only. See 5.1 above.
2 See Chpts. 9-13 below.
3 E-mail from Emily Johnsson to me, May 29, 2013. Regarding Emily Johnsson: On the website of the Organization of Danish Museums (ODM), this is how Emily Johnsson is introduced: “Emily Johnsson is an independent consultant, researcher and coach, who has been involved in the strategic development of the Cultural Sector in the UK for 10 years. She has worked with numerous museums across the UK and was the former Museums Libraries Archives trainer in Inspiring Learning for All and the Generic Learning Outcomes. Since 2007, she has worked with cultural departments in Sweden to enhance access and inclusion, and currently trains professionals across Sweden in what she calls, outcome- driven, insight-guided practice. On Sept. 30, 2013, I received an e-mail from ODM director of education and training Hans Henrik Appel confirming that this was Emily Johnsson’s own introduction of herself.
4 MLA no longer exists. Its remit has been passed over to Arts Council England (ACE). Ibid.
5 Press release Tuesday, Oct. 8, 2002; Resource (2002)
was the Learning Impact Research Project (LIRP), which, as explained above, was manned by the team who developed the GLOs.¹

The development of the GLOs both mirrors and contrasts certain aspects of the reform of higher education in Europe that was launched with the Bologna Declaration of 1999, the ambition of which was “the achievement of greater compatibility and comparability of the systems of higher education”² in the EU member states. Learning outcomes were seen as “one of the essential building blocks for transparent higher education systems and qualifications”³ and as being integral in the process of educational change. Defining and using learning outcomes in e.g. curriculum design signaled a shift in focus from teaching to learning and from a teacher-centered approach to learner-centered approach. In order to live up to the ambition of the Bologna Declaration, it was necessary to reach a consensus regarding what was meant by learning outcomes and how they should be used in the development of transparent and compatible qualification frameworks, etc. Key to this process was the establishment of the European Qualifications Framework (EQF), the proposal for which was put forward by the European Commission in September 2006. The EQF is an “overarching framework … set up in Europe to facilitate comparison of qualifications and qualifications levels…The core of the framework consists of 8 qualifications levels described through learning outcomes (knowledge, skills and competence).”⁴ Member states in the European Union were asked to reference their own national qualification frameworks to the EQF.

Oddly, the international (EU) initiatives and processes were not referenced in any of the literature about the GLOs at the time of their conception. Nonetheless, the people behind the GLOs opportuneely chose learning outcomes as the starting point for their work. Theano Moussouri, the author of a report about the background of the GLOs, explained that in the UK at that time, learning outcomes in formal education were written within the UK National Qualifications Framework (NQF) and were developed to fit

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¹ I am grateful to Dr. Ceri Jones, the School of Museum Studies, the University of Leicester, for drawing my attention to the fact that there were two phases of the LIRP project team: Phase 1 members were Eilean Hooper-Greenhill, Jocelyn Dodd, Theano Moussouri, Chris Pickford, John Vincent, Francois Matarasso and Marlene Morrison. Phase 2 LIRP members were Eilean Hooper-Greenhill, Ceri Jones, Jocelyn Dodd, Theano Moussouri, Catherine Herman, John Vincent, Marlene Morrison, Chris Pickford and Richard Toon. Phase 2 names were found in Hooper-Greenhill, Eilean (2003)
³ Adam (2004), p. 3. Stephen Adam is Principal Lecturer in the Dept. of Social and Political Studies at the University of Westminster, London.
⁴ European Communities (2008), p.3
specific programs of education and study. These national learning outcomes, like those of the EQF with which they were later aligned, derived from learning theory rooted in behaviorism and “the clear identification and measurement of learning and the need to produce observable and measurable outcomes,” within formal education. This understanding of learning outcomes relied on a structured system of teaching where the learning outcome “is a written statement of what the successful student/learner is expected to be able to do at the end of the module/course unit, or qualification.” According to Moussouri and the LIRP team, learning outcomes of this sort were ill-suited to use in an informal learning environment such as a museum, where “there are no study programmes, established learning objectives, or specific target dates for achieving outcomes, and no formal assessment process to which users are subjected.” Learning outcomes in museums had to be broader and make room for all the types of learning that are possible in a museum setting, from those experienced by students visiting with their teacher to the free-choice learning exercised by newlyweds on a honeymoon visit to a museum. A diverse museum audience does not arrive with a set standard or level of learning upon which new learning can be built and measured against. Combining their understanding of learning with the openness of the museum as a setting for learning, the LIRP team introduced the concept of generic learning outcomes. Eilean Hooper-Greenhill, in her paper outlining the conceptual framework underpinning the GLOs, pointed out that “the concept of generic learning outcomes is also familiar in other educational fields” and mentioned as examples the generic learning outcomes suggested in the Subject Review Handbook for Higher Education by the Quality Assurance Agency for Higher Education (QAA) and in the Teaching and Learning Research Program Economic and Social Research Council (ESRC). Examples of these generic learning outcomes were “knowledge and understanding”, “personal development”, “development of positive learner identities”, and “development of attitudes and values relevant to a learning society” and these were recognized by the LIRP team as constituting an “excellent starting point for the

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1 Moussouri (2002), p. 7
2 Op. cit., p. 4
5 Hooper-Greenhill (2002), p. 9
6 Ibid.
identification of generic categories for learning outcomes for museums, archives and libraries.1

7.3 Regarding formal, non-formal and informal learning

So although the GLOs were designated learning outcomes, they were carefully modeled or defined to fit a wider set of learning theories than the learning theories upon which the learning outcomes of formal education were traditionally based. The GLOs grew out of an approach to learning in which learning is viewed as a holistic experience – “learners play a much more active role in defining and controlling their own learning”2 – based on e.g. constructivist learning theories (e.g. Etienne Wenger) and social learning theories (e.g. Jean Lave and Etienne Wenger).3 This broader view of learning and its outcomes gives other types of learning equal status with intellectual learning, e.g. practical learning, emotional learning, experiential learning, learning about learning, self-knowledge and self-awareness, learning about preferences and attitudes and values.4 In the Moussouri report from 2002, learning as defined by George Hein, Etienne Wenger and Guy Claxton5 is mentioned as making up an important part of the theoretical geneology of the GLOs6 as these theorists’ approaches to learning were seen as being “appropriate to open learning environments,”7 including learning in adulthood and /or which takes place outside institutions or settings of formal education or learning. Other theoretical sources feeding into the roots of the GLOs are those having to do with the concepts of intelligence and skills, e.g. theories about emotional intelligence, musical and kineasthetic intelligence, practical intelligence, social intelligence and communication skills, analytical skills, creative skills and practical skills.8

It is necessary to attempt to clarify the differences between formal, non-formal and informal learning environments. Schools are typically associated with the first, and museums, when described as a learning environment, are typically associated with the two others.

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1 Ibid.
2 Moussouri (2002), p. 19
3 Op. cit., p. 16
5 Professor Guy Claxton is Visiting Professor of Learning Sciences at the University of Bristol’s Graduate School of Education
7 Ibid.
Briefly, a *formal learning environment* encompasses the following characteristics:

1) “A prescribed learning framework
2) An organized learning event or package
3) The presence of a designated teacher or trainer
4) The award of a qualification or credit
5) The external specification of outcomes”

It is easy to inscribe these five characteristics on our understanding of formal educational institutions subject to governmental legislation, regulations, guidance and policy documents regulating and organizing administration, budgets, curriculum, performance and evaluation, in-service training, funding opportunities, teacher resources, and students’ school lives from kindergarten through gymnasium and subsequent education. The difference between non-formal learning and informal learning is a more complex, as these two types of learning are understood in several different ways. The concept of informal learning is often met with much skepticism by educators within the formal education sector, as it comprises learning that is hard to quantify and evaluate and does not formally prepare individuals for positions in society. According to the European Centre for the Development of Vocational Training (CEDEFOP), *informal education* can be defined thus: “Learning resulting from daily activities related to work, family or leisure. It is not organized or structured in terms of objectives, time or learning support. Informal learning is in most cases unintentional from the learner’s perspective.”

The aspect of “unintentionality” is intriguing as it implies that learning simply happens to people whether they intend it to or not. In the comments to this definition, it is pointed out that informal learning outcomes do not often result in certification but that they “may be validated and certified in the framework of recognition of prior learning schemes,” which is a comment that seems to undermine the unintentionality aspect of the definition. Validation, certification, recognition and learning schemes all imply intentionality and attention to the learning process. The next comment points out that informal learning “is also referred to as experiential or incidental/random learning.” This also seems slightly self-contradictory as experiential learning is not

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1 Erat, Michael (2000), quoted in Miller (2005). Thoby Miller is Senior Lecturer in Youth and Community Education at Northeast Wales Institute of Higher Education
2 CEDEFOP (2008), p. 93
3 Ibid.
4 Ibid.
necessarily incidental or random. One needs only to consider the pedagogical practices originating in e.g. constructivist learning theory, examples of which can be found in the coursework of some of the cases of this research.

John H. Falk’s and Lynn D. Dierking’s “Contextual Model of Learning” contextualizes learning in museums within the personal, the physical and the sociocultural contexts, each of which is ascribed certain key factors that influence learning in this setting. Furthermore, the model illustrates the passage of time as an essential factor of learning. Falk’s and Dierking’s model is inspired by social constructivist learning theory. The insistence on the learner’s “context” and each of the key factors indicate this. Learning is seen as being experiential, built on prior knowledge, and socially facilitated and mediated. Furthermore, the model and key factors give a clear idea about what characterizes an informal learning environment. Falk and Dierking choose the term free-choice learning instead of informal learning: “In our opinion, free-choice captures the underlying motivational and structural nature of the learning that occurs in and from such settings better than does the other frequently used term, informal.”

The concept of free-choice learning is quite relevant when analyzing some of the learning that took place in the cases. However, some of the data of the present research indicated that museum staff members, when working with upper secondary school students during school visits, regarded this as a more formalized form of mediation than what they would normally provide for ordinary guests or even guests on guided tours. And although upper secondary school teachers viewed these visits as taking place in a much less formal learning environment, meeting mandatory curricular requirements was still an important issue for them. The students recognized and appreciated the element of free-choice learning that the museum context made possible and which much of the coursework developed by the teachers and museum professionals promoted; on the other hand, the students were doing curriculum-related work, so the extent of their free-choice learning was limited.

Here it is relevant to mention the concept of non-formal education, which can be understood as “any organized, systematic educational activity, carried on outside the framework of the formal system, to provide selected types of learning to particular

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1 See Fig. 7c, Appendix Chpt. 7; The model is from Falk (2002), p. 37
2 See Fig. 7d, Appendix Chpt. 7; The key factors are from Falk (2000), p. 178
3 Op.cit., p. xii
subgroups in the population, adults as well as children.” On the face of it, this concept seems a suitable designation for the framework of the learning activity that was planned and carried out by the interface partnerships. However, it does not take into account the “freedom” of the aforementioned free-choice or informal learning; nor does it make room for the formal, curriculum- and subject-related requirements which the students’ products had to meet.

So the learning environment that is created for the students in the interface between the school and the museum fosters an amalgam of learning comprised of free-choice, informal, non-formal and formal learning. In an attempt to suggest a concept that accommodates all four types of learning, I first turn to the interview responses of the teachers and museum professionals of the case studies. They made no distinction between informal and non-formal learning, whereas they did distinguish between formal and informal learning. The former was associated with schools and the latter was associated with museums. So in this study, I refrain from using the difficult term “non-formal learning”, as its meaning is contained in “informal learning” on the one hand, and “formal learning” on the other. In keeping with the teachers’ and museum professionals’ understanding of the two types of learning, in this study the term “informal learning” is used when the reference is to learning and learning environments outside of institutions of formal education, where “formal learning” takes place. The type of learning that goes on in the interface of the formal and the informal learning environment contains strands of both and could be called interface learning. Interface learning also encompasses Falk’s and Dierking’s concept of “free-choice learning”, which is sometimes used to describe the case students’ learning at the museums. It is important to remember that although free-choice learning is typically associated with learning in informal learning environments, in a formal educational context, effort is often made to provide free-choice learning opportunities for the students as well, not least as a way of intrinsically motivating them.²

7.3.1 Learning outcomes - the Danish Qualifications Framework

Of relevance to this research is the Danish Qualifications Framework, published in 2011. As in the EQF, learning outcomes are used to describe level and qualification and at each

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2 The concepts of intrinsic and extrinsic motivation are explained and used in conjunction with the analysis of the learning behavior of the students in the cases analyses below.
level, the learning outcome is split into three categories or concepts: knowledge, skills and competence. Knowledge has to do with a person’s understanding of a given subject, including knowledge about theory and practice and how to place one’s knowledge in a context or explain one’s knowledge to others. Skills can be practical, cognitive, creative or communicative and as a concept has to do with understanding how and when to apply one’s skills in a given task. Competence has to do with autonomy and responsibility, the ability to cooperate with others and the ability to be responsible for one’s learning.\(^1\) In the overview of Danish degrees and certificates of education in the same document, Level 4 certificates (upper secondary education programs) document that a graduate has achieved the learning outcomes stipulated by the learning objectives of the educational program, all of which are relevant to mention in the present context:

1) “To prepare the pupils for higher education
2) To develop academic insight and study competence
3) To become familiar with utilizing different forms of work
4) To achieve the ability to function in a study environment
5) To relate to their surroundings and their own development with reflection and responsibility
6) To develop their creative and innovative skills and their critical sense
7) To prepare them for participatory democracy”\(^2\)

The learning outcomes (knowledge, skills and competence) of Level 4 of the Danish NQF are meant for the overall upper secondary education program, of course, meaning that they differ from subject-specific learning outcomes, e.g. for Mathematics or a foreign language. They can be characterized as meta-learning outcomes and as such, they are more difficult to measure quantitatively than e.g. how one does on a multiplication table test or at conjugating German verbs. It is interesting to note how similar these learning objectives / learning outcomes\(^3\) are to the GLOs, especially if one considers the sub-categories of each

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\(^1\) EVA (2011C), p. 18  
\(^2\) Op. cit., p. 66  
\(^3\) According to Note 4 of the European Qualification Framework Series, the difference between learning objectives and learning outcomes can be summed up thus: “Learning outcomes are expressed in a way that as the name suggests, is a manifestation of learning, whereas learning objectives are written as a guide to the teaching programme that might, or might not, lead to the desired learning.” Hence, it follows that if a person has achieved a certificate of learning within a given program, that person has achieved the desired learning. CEDEFOP (2011), p. 14
GLO. For example, “opinions about other people”, “increased capacity for tolerance” and “empathy”, which are three sub-categories under GLO3 (Attitudes and Values), align themselves seamlessly with the last of the Danish Level 4 learning objectives. Another example is GLO4 (Enjoyment, Inspiration, Creativity) and two of its sub-categories – “innovative thoughts” and “creativity”, which fit the second to last Level 4 learning objective above very well.

7.3.2 Learning Outcomes and the EU’s eight key competences

“Key competences for lifelong learning are a combination of knowledge, skills and attitudes appropriate to the context.” In 2006, the European Council produced a recommendation regarding eight key competences that were essential for people, young and old, to achieve and use as citizens navigating in and contributing to a knowledge society.

These are the eight key competences:

- Communication in the mother tongue
- Communication in foreign language
- Mathematical competence and basic competences in science and technology
- Digital competence
- Learning to learn
- Social and civic competences
- Sense of initiative and entrepreneurship
- Cultural awareness and expression

The text describing the knowledge, skills and attitudes related to each of the competences contains words and phrases such as “to interact linguistically in an appropriate and creative way”, “communication in foreign languages, which involves … mediation and intercultural

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1 Fig. 7b, Appendix Chpt. 7
2 Key competences for lifelong learning, Europa (2006)
3 Ibid.
4 For a highly critical assessment of the ideologies underpinning the eight key competences of the European Reference Framework, specifically the competence “Learning to learn”, see Pirrie (2013), pp. 609-626. Pirrie et al claim that despite the high-flown rhetoric of the EU documents concerning competences and lifelong learning, the ideologies underpinning them are rooted in human capital theory and labor economics, in which “education is valued primarily as an economic investment” and is expected to advance knowledge, skills and qualifications that “have value and utility in the labour market.” pp. 617-618. Dr. Anne Pirrie is Reader in Education at University of the West of Scotland.
5 Europa (2006)
understanding”, “the mastery, use and application of knowledge and methodologies that explain the natural world”, “understanding the changes caused by human activity and the responsibility of each individual as a citizen”, “confident and critical use of information society technology”, “personal, interpersonal and intercultural competence”, “personal and social well-being”, “civic competence”, “initiative and entrepreneurship”, “creativity, innovation and risk-taking” and “appreciation of the importance of the creative expression of ideas, experiences and emotions”.

Once again, if we compare the GLOs and their sub-categories to this list of competences and their related knowledge, skills and attitudes, we discover an obvious kinship. Like the GLOs, the knowledge, skills and attitudes are “soft” and have to do with “whole” human beings engaged in the business of learning and living.

7.3.3 Learning outcomes and upper secondary education in Denmark
So-called “soft” learning outcomes as those described above also appear in the articles of the statutes for upper secondary education programs as well as in the study programs of the multi-disciplinary courses they offer. In the following, there are two examples from the STX program. The first example is two of the articles of the statutes for the STX program, the second is part of the curriculum for the Multi-subject course (STX). The words and phrases that bring the GLOs to mind are italicized.

Example 1:

”Art. 4. The education is to provide a general education with priority given to the students’ development and personal empowerment. Students must therefore learn to deal with their surroundings in a thoughtful and responsible manner, fellow human beings, nature and society, and their own personal development. In addition, the education is to develop the students’ creative and innovative talents as well as their critical sense.

Art. 5. The education and the culture of the school in general are to prepare the students for participation, responsibility, rights and duties in a society based on freedom and democracy. Lessons and school life on the whole must therefore be based upon intellectual liberty, equality and democracy. In this way the students will acquire the competence necessary to participate actively in a democratic society and appreciation of the opportunities for individual

1 Ibid.
2 For an insightful discussion of the differences between the GLOs and the eight key competences, i.e. as an assessment tool in regard to learning outcomes at museums, see Kling (2010), pp. 12-14. Sofia Kling, PhD, worked at Nordic Center for Heritage Learning.
and collective contribution to change and progress as well as an understanding of local, European and global perspectives.”¹

Example 2:

“The learning objective of the Multi-subject course is to challenge the students’ creative and innovative abilities and their critical sense when they apply subject-related knowledge in cross-disciplinary work and, on the basis of subject-related and methodological considerations geared to the future, to strengthen their ability to deal with their surroundings and their own development in a thoughtful and responsible manner. Furthermore, the Multi-subject course is to strengthen the students’ ability to relate the knowledge and methodology of each subject to that of other subjects, and to qualify their choice of subjects in the gymnasium (STX) as well as their choice of further education.”²

GLO concepts like “deepening understanding” and “making links and relationships between things” (GLO1), “intellectual skills”, “social skills” and “information management skills” (GLO2), “increased capacity for tolerance” and “empathy” (GLO3), “innovative thoughts” and “creativity” (GLO4) and “a change in the way people manage their lives” (GLO5) reflect the learning objectives explicated in these two examples.

7.4 Summing up – regarding learning in museums

It is not surprising that certain similar concepts recur in the wording of the learning outcomes delineated in all of these documents, which are concerned, to varying degrees, with formal education: The various qualification frameworks, the eight EU key competences of lifelong learning and the educative objectives and frameworks of upper secondary school curricula as well as the curricula of the multi-subject courses. What is interesting to notice in this context is that the GLOs, despite the fact that they were developed to measure learning impact in informal learning environments, are also similar. We have seen that the learning theory underlying the GLOs, formulated in 2002, was based on a holistic view of learners, who were seen as active co-creators of their own knowledge. The people behind the GLOs advocated a wider, more encompassing view of learning and learning outcomes, to fit the unstructured, informal learning environment of museums, archives and libraries that cater to guests from all walks of life. Over ten years later, it now

¹ My translation of parts of Chpt. 1, paragraph 1, articles 1 and 2, of the objectives of the STX program, Retsinformation (2011)
² My translation of the Learning Objectives for the Multi-subject course program in STX, Retsinformation (2013) See also The Danish Ministry of Education (n.d.D)
seems that this approach to learning and learners prevails in national and European statutes for education, curricula, programs, declarations, recommendations and guidelines having to do with education. No doubt this is due to the fact that the qualification frameworks and the key competences are not only linked to the formal education of children and young people, but also to lifelong learning and thereby targeted very different educational programs (e.g. academic, vocational), age groups and learning settings (formal and informal, state-run and privately-run), making it necessary to adopt a broader, more inclusive definition of learning and learning outcomes. Even the choice of words in the statutes for upper secondary schools – places of formal education – and in the curricula for multi-subject courses at these schools reveals an approach to learning that resembles the one underlying the GLOs.

An afterthought

According to Emily Johnsson, an independent consultant who has been instrumental in teaching museums across the UK and in Scandinavia about how to implement the GLO system, the ideas and theories behind the GLOs “have evolved tremendously since they were developed.” As we have seen, originally the GLOs were developed as a language that made it possible for cultural heritage institutions to discover and articulate the learning impact they had on their users. They were mainly used retrospectively. Since then there has been a shift in thinking and now the greater purpose of GLOs is to induce museums to work with outcomes strategically; the GLO mantra is now “outcome-driven, insight-guided.” “Outcome-driven” means that the GLOs are to be used to define desired outcomes, i.e. as “prompts” to define learning outcomes. “Insight-guided” means to define strategic questions that help the museum discover how to tailor its offer to meet the needs of the users and to ensure the desired learning outcomes are realized (“front end and formative evaluation”5) and to find out why or why not these needs were met by the museum’s offerings (“summative evaluation”). In other words, the GLOs are to be used to articulate and reflect about learning outcomes and to use them strategically and actively in

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1 Emily Johnsson has worked with the GLOs since 2003. She is the Evaluation & Research Officer at the London Museums Hub and the MLA’s (Museums, Libraries and Archives Council) official GLO teacher. This information is from one of Emily Johnsson’s slides from the GLO course she taught at the Organization of Danish Museums (ODM). Johnsson (2012)
2 This quote is from a Skype meeting I had with Emily Johnsson on May 29. 2013. This meeting was not recorded. Hence, there is no transcript of it.
3 Ibid.
4 E-mail from Emily Johnsson to me, June 3, 2013
5 Ibid.
the business of being a museum. To my way of thinking, this might indicate the start of a pendulum swing back towards a behaviorist understanding of learning outcomes similar to those traditionally formulated in conjunction with subject-related curricula in formal education, i.e. learning outcomes that can be planned for and, when achieved, checked off on a list.¹

¹ Using the GLOs prescriptively (outcome-driven) bears resemblance to Stephen Brown’s recommendation to use Diana Laurillard’s Taxonomy of educational media, 7.1.2 above
Chapter 8: Analytical tool # 2: Wenger’s communities of practice

The second research question, “How are the teachers’ and museums professionals’ understanding of their own and their partner’s communities of practice affected by their collaboration to develop and carry out coursework for students in a museum learning environment?”, has to do with the teachers and museum professionals of the partnership cases.

It is time to consider those of Etienne Wenger’s concepts and models that I apply in the analysis and interpretation of the research data. In the subsequent sub-section, I give some examples of how I do this.

Wenger’s concepts and models provide the main analytical tools concerning interface partnership collaboration, but models developed by other researchers are applied when relevant, e.g. Kira S. King’s Partnership Structure Continuum,1 Ane Hejlskov Larsen’s Collaboration – three alternatives,2 Mark D. Osterman’s and Beverly Sheppard’s list Five areas of understanding3, Michelle Phillips’ distinction between and characteristics of Cooperatives and Genuine collaborations4, Shirley M. Hord’s Model of Collaboration5 and Sanne Akkerman’s and Arthur Bakker’s concepts regarding Learning at the boundary.6 These supplementary models are presented in 8.3 below.

8.1 Communities of practice as an analytical tool in this research

Concepts and models

There are a number of Wenger’s concepts7 which lend themselves well to the analysis and interpretation of the data related to learning and collaboration garnered in the course of this study. This is also true of much of his terminology. It is very important to understand that while the case study partnerships did not constitute Wengerian

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1 King (1998B), p. 7
2 Ane Hejlskov Larsen, Center for Museology, Aarhus University, was affiliated with the interface project as an associate researcher for two years. This model is from her (unpublished) presentation at the interface conference held for upper secondary school principals and museum directors November 30, 2010.
3 Osterman, Mark D. and Fortney, K.: Museums and Schools Working Together, in Fortney (2010), pp. 5-7
5 Hord (1986), pp. 24-25. Shirley M. Hord is Scholar Emerita at the Southwest Educational Development Laboratory in Austin, Texas.
6 Akkerman (2011), pp. 1-5
7 Many of these concepts were developed during Wenger’s collaboration with anthropologist Jean Lave, which resulted in their book Situated Learning Legitimate Peripheral Participation, reprinted several times since its publication in 1991 by Cambridge University Press, most recently in 2001.
communities of practice per se, the process of their drawing together and collaborating bore many resemblances to the formation of a community of practice, as Wenger describes it, making it relevant and fruitful to use his terminology.

In Wenger’s philosophy, a core concept is practice. Practice is a dynamic concept that delineates the interaction of people involved in the pursuit of a common enterprise. Practice is not exterior to human activity and interaction, but both continuously forms and is formed by the people who are involved in it. Through their interaction, people learn not only about the common enterprise but also about each other and themselves. Eventually, “this collective learning results in practices that reflect both the pursuit of our enterprises and the attendant social relations.”

Wenger furthermore expands the concept of practice by discussing different aspects of it, all of which relate to the social nature of learning: Practice as meaning, as community, as learning, as boundary, … and as knowing in practice. Each of these expanded concepts of practice contains other important concepts that are relevant to this study. Therefore it is necessary to clarify what each concept and its attendant concepts mean. In the following, I will briefly outline how the concepts and models have been applied to the research data.

**Practice as meaning**

According to Wenger, practice is the “process by which we can experience the world and our engagement in it as meaningful.” The negotiation of meaning is what people do when they engage with other people, exert their influence on them and are influenced by them, produce meaning through collaboration with them in a continuous give-and-take process. The process of the negotiation of meaning takes place at the convergence of what Wenger terms participation and reification. Participation refers to the engagement of people in social enterprises and social communities but is not equivalent to collaboration, as it can also involve e.g. oppositional, combative or competitive relations. Furthermore, our experience both forms and is formed by our participation in social communities, and thus our participation in these communities is constitutive of our individual and social identities. E.g. after a person has had a conversation with another person, perhaps about how best to plan a four-hour visit at the museum for thirty 15-year-old students, the effect of their

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1 Wenger (2007), p. 45
3 Op. cit., p. 51
4 Op. cit., p. 54
interaction does not end when they depart each other’s company. Put very simply, the conversation may have altered the way they see each other (social identity) and the way they see themselves (individual identity). Afterwards, each of them may work on the plans on their own and their experience of the other and of the conversation they had will influence how they do this. So participation also encompasses activities even when we are not with other people.¹

Reification “refer[8] to the process of giving form to our experience by producing objects that congeal this experience into “thingness,””² which are basically the “things” which people perceive as containing the essence of the meaning they have negotiated.³ Examples of reified “things” are stories, events, mission statements, classification systems, school curricula, tools, artifacts, time tables, etc. However, an important point is that reification does not just solidify meaning into an object,⁴ as the meaning of the reified “thing” in a community of practice is always open to further negotiation. E.g. the same two people from the example above leave their interaction with the outline of a plan for the students’ activities at the museum; on the surface, the version each has of the reification of their interaction – the plan – is identical to the other. However, with individual understandings of what transpired at the meeting and exactly what the plan means are different. I.e. the plan, though seemingly “solid”, is still in flux. Wenger spends a great deal of time explaining the interplay between or duality of participation and reification, but for this study the following quote will suffice as an explanation:

“…reification always rests on participation: what is said, represented, or otherwise brought into focus always assumes a history of participation as a context for its interpretation. In turn, participation always organizes itself around reification because it always involves artifacts, words, and concepts that allow it to proceed.”⁵ Fig. 8a in Appendix Chpt. 8 presents Wenger’s illustration of this duality.

Practice as community … or a community of practice

Practice does not exist in a void but is tethered in time and space and to the social interplay between people involved in a joint enterprise; this is the foundation of a community of practice. Community in Wenger’s terminology is framed and held together

² Op. cit., p. 58
³ Ibid.
⁴ Op. cit., p. 60
⁵ Op. cit., p. 67
by three dimensions: *Mutual engagement, joint enterprise, and shared repertoire*. Together with joint enterprise and shared repertoire, mutual engagement is what creates and maintains coherence and community in a community of practice.¹ It is in mutual engagement that the joint enterprise is negotiated and reified and re-negotiated and re-reified, a process which over time produces a shared repertoire, which in itself also becomes an object of negotiation and reification. Mutual engagement presupposes membership (core or peripheral) in a community of practice. I.e. exchanging pleasantries with the check-out person in one’s local supermarket is not an example of mutual engagement as one is not negotiating a joint enterprise with him or establishing a shared repertoire. Although mutual engagement may be deeply influenced by individual participants’ character traits, ambitions, likes and dislikes, etc., their ways of dealing with the tasks at hand become connected to how other members respond to these tasks through mutual engagement.² Participants can have different roles to play in the joint enterprise; their contributions can be complementary, e.g. the school librarian and the teacher when it is time for students to find material for their multi-subject exams, or they may have “overlapping competences”³, e.g. museum curators planning and designing an exhibition. In an *interface* collaboration, teachers and museum curators have a significant overlapping form of competence by virtue of their similar academic background and training.

The joint enterprise of a community of practice ties it together. Through the process of negotiating the enterprise, relations of mutual accountability are formed among the participants, e.g. deciding what is essential for the enterprise to succeed and what should be avoided. Discovering “what works” and sharing in the work of implementing it creates bonds between the individual participants. This leads us to the third dimension of or “source of community coherence”⁴ in a community of practice, its shared repertoire.

Shared repertoire refers to the history of mutual engagement in dealing with the joint enterprise(s) of a community of practice. According to Wenger, a shared repertoire is “inherently ambiguous,”⁵ meaning that it continues to be negotiable. I.e. the history of a community’s practice is not an immutable narrative about the past, nor is it external to the

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¹ Op. cit., p. 73
² Op. cit., p. 75
³ Op. cit., p. 76
⁴ Op. cit., p. 82
⁵ Op. cit., p. 83
A community’s members. It is open to interpretation and is negotiable. A community’s shared repertoire can be used for many purposes, e.g. members talk about how they dealt with a particular problem, thereby strengthening and reaffirming their sense of belonging to a successful community, or members do not share their history with newcomers to their practice, thereby establishing a hierarchy of being more or less “in the know.” A case in point is Shoresby, where none of the “old-timers” – the museum professionals and the earlier generations of interface teachers from the school – shared the partnership repertoire with the new teacher, e.g. the knowledge that starting their collaboration by matching their expectations of it was a key to its success.

Wenger’s model “Dimensions of practice as the property of a community” illustrates these three dimensions of practice.

*Practice as learning*

Two integral components of learning in a community are once again, reification and participation, the two concepts described earlier. As we have seen, participation and reification are continuous, intertwined processes and, according to Wenger, in the course of time, communities of practice “become invested” in both. Participants in a community of practice who have learned the ropes of that practice identify themselves with it. The stories, discourses and concepts of their shared repertoire are perpetuated, e.g. by being passed on to newcomers to the community. A newcomer’s arrival on the scene affects the community of practice from the inside – in the process of his learning the ropes of the community, the newcomer takes his cue from more experienced members, who in turn, reconsider and re-learn their shared repertoire, seeing it through the newcomer’s perspective. Members leaving the community, e.g. if they find a new position somewhere else, take part of the shared repertoire with them, causing what Wenger calls a “discontinuity,” which also affects the community of practice from the inside. Changes in conditions outside the community of practice also affect it. The community is not an isolated entity, e.g. its participants also belong to many other communities of practice, or the community of practice is one of many in a large institution, and as conditions always change, its practice must be reinvented to adapt to each new situation.

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1 Op. cit., p. 84
2 Op. cit., p. 73 See Fig. 8b, Appendix Chpt. 8
3 Op. cit., p. 89
4 Op. cit., p. 90
People’s engagement in practice is a learning process. This means that they learn along the three dimensions of practice as were described above. Their learning involves “evolving forms of mutual engagement”, “understanding and tuning their enterprise” and “developing their repertoire, styles and discourses.” E.g. a number of teachers who have the same class are appointed to work as a team to plan lessons according to the students’ syllabus of study in each subject. They have not worked together as a team before. Many of the conditions for their teamwork are given in advance, e.g. the students’ syllabi, the study program the class belongs to, the proportion of girls and boys in the class, the number of hours set aside for the teachers’ teamwork, etc. Furthermore, the teachers most likely have experience from working in other teams or in other forms of collaboration with colleagues. In the wider context, the team members also belong to other communities of practice: Their own departments at the school, all of the teachers at the school, teachers in general. Each person brings his experience to the team and adapts it to fit this new constellation of people. This is part of the process of evolving mutual engagement: Finding out what works in this team, how to get along with each other in order to carry out the tasks at hand. It also represents an important element of their learning that has to do with “understanding and tuning their enterprise” in that they work together to define the enterprise of their team and how best to make use of each other’s experience so that the team functions well and the tasks are carried out. In the course of this work, the team develops and amasses a repertoire of shared experience, e.g. what works well with this group of students, stories from study trips, subjects best left untouched due to disagreement or pet peeves, etc. Thus, their learning process distributes itself along all three dimensions and a practice for this team emerges which becomes special for them and with which each team member identifies as he is invested in it. As the practice is established, so is its boundary.

**Practice as boundary**

The boundary of a community can be unmarked or clearly observable, e.g. by the titles of the people who belong to it or by more or less formalized rituals that a newcomer is required to go through in order to cross it or by the members’ having the right political connections. Whether a boundary is unmarked or clearly observable has little to do with the case with which newcomers cross it. Wenger sets forth two ways connections can be

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1 See Fig. 8b, Appendix Chpt. 8
2 Ibid.
3 Not to mention communities of practice outside of school.
formed between practices: Boundary objects and brokering. The forms of reification listed in the right hand side of the model in Fig. 8a are examples of boundary objects which have a similar function to the reified stories and events within the community of practice, i.e. they are points of focus where communities of practice can connect and interact. Wenger presents three categories of boundary objects: Artifacts, discourses and processes. Artifacts are tools, documents or models that facilitate connection between practices, e.g. the curriculum for 2nd year History under the STX program, which opens a channel of potential communication between the history teacher and the museum curator. The term Discourses refers to a common language that enables communication across boundaries, e.g. discourse having to do with what constitutes being a cultured person and what young people need to learn in order to achieve that status. Processes are procedures, events, activities or meetings that make it possible for people to coordinate their interaction. An example of such a procedure is the cluster meetings organized by the managers of Interface, where teachers and museum employees from different partnerships meet to learn about each other’s practice as well as to coordinate new activities.

Where boundary objects have to do with reification, brokering, the second method of connecting between practices, has to do with participation. Brokering involves translating and coordinating activities and viewpoints between practices, which results in members learning about each other’s practice. Successful brokering also depends on the legitimacy of the broker, e.g. his status in the community or his knowledge about the task at hand.

Wenger also identifies different types of boundary encounter, e.g. meetings, visits and telephone conversations. One-on-one encounters are between two members of different communities who exchange thoughts about their own practice in an effort to create a closer bond with each other. This type of encounter has a limited effect as the two participants are the only ones who are actually privy to its content. Another type of

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1 Op. cit., p. 104. On p. 106, Wenger explains that the term “boundary objects” was coined by sociologist Susan Leigh Star and references the following article: Star (1989). The late Susan L. Star was an American sociologist.
3 Appendix Chpt. 8
4 Ibid.
6 Wenger (2000), p. 236
7 Ibid.
8 Ibid.
10 Op. cit., p. 112
encounter is *Immersion*, which is when members of one community visit the other community. This deepens the visiting members’ knowledge of the community being visited, but the host community learns very little about the visitors’ home practice. The third type of encounter is *Delegations*, which is when several members of one practice meet with several members of another practice. This type of encounter allows each community to learn something about the practice of the other community.¹

Wenger also describes how the connection spanning the boundary between two communities can eventually form a practice in its own right. Participants on each side of a boundary can form a close relationship and develop a detailed understanding of their joint enterprise.² Mutual engagement over long periods of time may establish such relationships, and their maintenance may become part of the brokers’—and the connected practices’—enterprise. Wenger describes three types of connections that go beyond boundary encounters, of which one is relevant in the present research: *Boundary practices.*³ The term *Boundary practices* refers to a boundary encounter that has developed into a continuing platform for mutual engagement.⁴ E.g., at one point the Brigby partnership exhibited this kind of practice: The teacher and the museum educator continued to develop the partnership by involving other teachers and students in the collaboration⁵; the school even formalized the practice by allocating a certain number of salaried hours to the teacher for his work.

**Characteristics of communities of practice and constellations of communities**

In Chapter 5 of Wenger’s book “Communities of Practice” Wenger lists fourteen characteristics⁶ that indicate the formation of a community of practice. These indicators can be used to ascertain whether a given collaboration “lives up to” the designation *Community of practice*. None of the *interface* partnerships can be considered a community of practice according to these indicators if they all must be taken together. However, in the analysis of the research cases, there are individual ones which can be used as an indication of the degree and type of collaboration between the partners, e.g.:

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¹ Op. cit., p. 113
² Sometimes so much so that others are prevented from understanding or participating in it. Ibid.
⁴ Ibid.
⁵ This practice was discontinued when the museum educator found a new position at another museum. However, the teacher has continued his work and has developed collaborations with other cultural institutions in Brigby.
⁶ Wenger (2007), p. pp. 125-126. See Fig. 8c, Appendix Chpt. 8
1) Sustained mutual relationships
2) Very quick setup of a problem to be discussed
3) Knowing what others know, what they can do, and how they can contribute to an enterprise

In the same chapter, Wenger also identifies a list of nine indicators of what he terms a *constellation* of interconnected practices.¹ This refers to a grouping of practices that are related through e.g. similar enterprises or enterprises that complement each other in some way. Of these nine indicators, only one is truly relevant in relation to *interface* communities of practice, namely “having related enterprises”². “Having related enterprises” describes a connection between museums and upper secondary schools about which neither institution necessarily thinks very actively, namely their mission to educate people or “bring them up” to become educated, cultured, socially aware and responsible citizens. Having this related enterprise makes it attractive for upper secondary schools to use museums as a learning environment for their students.

*Knowing in practice*

Wenger reiterates time and again that communities of practice are about learning and knowing and that the meaning members learn and know arises out of its negotiation within the duality of participation and reification. The *experience of meaning* in a community of practice is achieved by its members in stops and starts, over time and in varying degrees, as they “learn the ropes” and learn “to read the signs” of how participation and reification take place in the community they belong to, are attempting to enter or with which they wish or have been asked to collaborate. In order to enter a community of practice and become a competent member, one must study and align one’s experience with the community’s understanding of what competence is,³ either by transforming one’s own experience to fit it or by influencing the community’s competence to fit one’s own experience or, as is most likely the case, by a combination of the two types of alignment.

This is important in relation to the formation and development of partnerships, as learning about the other’s institution (practice) is essential if a joint enterprise is to be established. Furthermore, boundaries between communities can only be crossed when, as

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¹ Op. cit., p. 127, See Fig. 8d, Appendix, Chpt. 8
² Ibid.
³ Within a regime of competence, knowledge is defined “as what would be recognized as competent participation of practice.” Ibid.
Wenger says, “participants are able to recognize an experience of meaning in each other and to develop enough of a shared sense of competence to do some mutual learning.”

These observations can be used in the analysis of the research data relating to the partnerships’ collaboration.

Identity – “the social, the cultural, the historical with a human face”

Wenger’s basic understanding of identity is that the construction of an individual identity is a social process; in fact, the individual and the social in this process cannot be separated. The mutually constitutive process of the individual and the social in identity formation corresponds to what happens in the learning process, which I explained at the beginning of Chapter Three. Regarding an analysis of the learning of the teachers and museum professionals (and the students) of the research cases, it is relevant to direct our attention to Wenger’s understanding and discussion of identity. Several of his thoughts on identity are applicable to the analysis, e.g. regarding becoming and acting as a member of a community and whether – and how – this affects members’ understanding of themselves and of others.

According to Wenger, the process of developing a community of practice entails negotiating one’s place in it, i.e. forming an acceptable, functional identity. When people feel at home in the community, they naturally feel “at home” with each other; they recognize each other as competent members and understand that they themselves are competent. They know how to advance their joint enterprise because they understand it and feel accountable to it. Building their community together has provided them with a shared history and they see themselves as belonging to it and keeping it alive. In other words, they identify themselves with their community.

Wenger introduces the concept of trajectories to represent an individual’s movement in relation to a given community of practice. Wenger uses this concept to talk about how the trajectories of old-timers in a community of practice are part of what he calls “paradigmatic trajectories,” meaning individual trajectories or composite stories that provide a “set of models” or a “set of possibilities” which newcomers interact with, thus negotiating and forming their own trajectories in the community. In relation to the analysis of the interface

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1 Op. cit., p. 140
3 Op. cit., p. 149
5 Ibid.

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partnership collaboration, this is interesting because although the case partnerships differed in “age”, how they negotiated their joint enterprise was not dissimilar and, in the case of the “old” partnerships, did not seem particularly influenced by old-timers’ experience. Perhaps this is because the partnerships were too loosely organized and there were too many newcomers for paradigmatic trajectories to develop. Conversely, if the same few people make up the partnership year after year, their joint enterprise and shared repertoire seem to become all core and no periphery and with a hardened boundary which is difficult to cross.¹

**Examples of concepts and models related to interview responses**

The interview responses indicate that the learning experiences of the teachers and museum staff occurred primarily because they stepped across the boundary of their own community of practice into that of the other’s. Crossing the boundary into a different community of practice brings one’s own community of practice into much sharper focus and one learns about it as well, as described by Wenger here:

“We have been with a community for a long time. We know the ropes. We are thoroughly competent, in our own eyes and in the eyes of our peers. But something happens. We are sent overseas. We go to a conference. We visit another department. We meet a “stranger” with a completely different perspective … we have an experience that opens our eyes to a new way of looking at the world. This experience does not fully fit in the current practice of our home communities. We now see limitations we were not aware of before…”²

Here are a few examples of how Wenger’s concepts can be used. The concept of boundary encounter and its related categories can be used to characterize how the two communities of practice met. E.g. the initial encounters of the teachers and museum employees of the Cranwell case can be characterized as 2 x Immersion, where they “took turns” visiting each other’s institution. In the Westby case, the boundary encounter between the two institutions can be characterized as “one-on-one” meetings between Angelina and Nash. The fact that the encounters of Cranwell and Westby are different may

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¹ See Fig. 8j, Appendix Chpt. 8: This is an overview of the concepts explained above and the page upon which the explanation of each concept can be found. The overview does not contain the categories or types assigned to each concept. This does not preclude that these categories and types will be used in the analysis.

reveal or lead to an understanding of how and what the teachers and museum employees felt that they “got out of” their collaboration.

Another example is the concept of mutual engagement and its related categories. As none of the interaction partnerships actually live up to all of Wenger’s fourteen characteristics, it might be argued that mutual engagement, which, as we have learned, presupposes membership in a community of practice, is irrelevant to use. However, using the concept and its related categories allows us to gain an understanding of the degree to which the partners engaged with each other (e.g. number and type of meetings) and how they viewed and explained this engagement when they were asked to characterize their partnership’s collaboration.

A final example also involves the students. In the Shoresby case, Suki, one of the students I interviewed, talked about her experience of getting different answers to the same question she asked two museum curators, and how it was frustrating for her not to know which one was correct. Dean and Oliver, the two museum people that Suki spoke to, both mentioned in their interviews that it was unfortunate that they had given her different answers. Two of the other interview students, Sean and Richard, related how they understood that talking about theoretical Physics, as they learned it in school, when they only had 7.5 minutes to present one of the museum’s steam engines to their families on Presentation Day, would just not work. They made a decision to downplay Physics drastically in their presentation, which they felt bad about because their Physics teacher would be disappointed. In both situations, the students had to negotiate meaning. They had to evaluate or interpret their situation and actively work out and apply a course of action that suited it. The setting they were in was unfamiliar to them and the practice they were accustomed to (asking questions of experts and receiving unequivocal answers and applying theoretical Physics, respectively) had to be adjusted to fit it.

8.2 Critique of Wenger’s theory
In their article “Informal interprofessional learning”, Gillian Nisbet, Michelle Lincoln and Stewart Dunn sum up Wenger’s community of practice theory (which they abbreviate CoP) as part of their presentation of theories pertinent to use in relation to workplace learning. Although they find CoP theory relevant and advocate incorporating aspects of it in the
interprofessional workplace because it focuses on “learning through practice,”¹ they also cite several researchers’ critiques of the theory.² Of these critiques, especially two are relevant to mention here, namely that Wenger’s theory does not seem to take power relations into account nor offers a sufficient explanation of the influence that organizational structure has on how communities of practice function.³

Fortunately, we are able to know a little bit about Wenger’s thoughts on the influence power relations and organizational structure may have on a community of practice. In my Skype conversation with him,⁴ I asked him about the former in relation to schools and museums, referring to the fact that their dissimilar functions and purposes might cause a “power thing.”⁵ I wanted to know if he had written about how unequal status affected collaboration across community boundaries, and he replied, “No, I have not written about that explicitly, I mean that it’s always there whenever you have boundary interactions.”⁶ Later he developed this thought a little further when he said that it is the people negotiating at the boundary who choose whether or not to let their interaction reflect any inequality at the boundary and that “unequal power between the museum and the school does not determine the relationship between two individuals who live at the boundary.”⁷ In an ideal world, that might be true, but in relation to the findings of the data, we shall see that the “unequal power between the museum and the school” did have an influence on how the teacher(s) and the museum curator(s) collaborated and on what they felt they learned from it.

¹ (Authors’ italics) Nisbet (2013), p. 470. The workplace in focus in this article is a health care setting. Dr. Gillian Nisbet is lecturer in Work Integrated Learning at the University of Sydney.
³ Ibid.
⁴ See Skype interview with Etienne Wenger, Appendix Chpt. 8. The interview is not reproduced in full length. Only passages relevant to the analyses in this dissertation are included.
⁵ Ibid.
⁶ Ibid.
⁷ Ibid.
A little bit later in the discussion, when I asked him about his theoretical background, he mentioned i.a. Pierre Bourdieu, whom he said “is a theorist of power as opposed to a learning theorist, I am a learning theorist. So power isn’t the first thing I focus on.”

Wenger explained that there are “power relationships” in what he called “competence” or a “claim to competence,” but in his theory, he “foreground[s] the learning aspect”, contrary to Bourdieu, who focuses on the power aspect. In this study, my focus is also on learning, so in that respect, Wenger’s theory fits very well.

The second critique of CoP – that the theory does not adequately explain the influence of organizational structure on workplace learning – intersects with the previous critique regarding power relations, I think. As Wenger pointed out in the interview, “any organization is a learning system” made up of “multiple practices interacting,” where boundaries, repertoire, claims to knowledge and claims to competence must continually be negotiated. This indicates to me that Wenger’s theory does take the influence of organizational structure on learning into account and certainly to an extent that makes it illustrative to use in the analysis of how the structure of the organizations in the present study influenced the collaboration between them and consequently, the learning that took place.

A third critique of Wenger’s theory is put forth by Associate Professor at the University of California Santa Cruz, Doris Ash in her article about informal learning in museums. Ash applied Wenger’s CoP theory in relation to an action research project involving museum educators. Although she found Wenger’s theory helpful to understand the development of the participants’ interaction and joint enterprise, she also grew to feel that it did not provide explanations for “how nuanced disagreements and contradictions can actually drive expansive learning within shared activities.” In my opinion, Wenger’s theory can indeed be used to explain conflict and contradiction by applying the concept of negotiation, e.g. participants in a CoP or at the boundary between two CoPs continually negotiate and re-negotiate the artifacts, actions and discourses that characterize and build their shared repertoire, including evaluating a less than successful joint enterprise and

\[1\] Ibid.
\[2\] Ibid.
\[3\] Ibid.
\[4\] Ibid.
\[5\] Ash (2014)
\[6\] Op. cit., p. 112
negotiating how to improve it for the future. A case in point is the Cranwell collaboration, which is analyzed in Chapter 12.

8.3 Supplementary concepts and models

In this section, I briefly introduce a few non-Wengerian concepts and models which provide supplementary analytical perspectives on the research data, thus ensuring that the analysis does not become too one-sided. Furthermore, applying different perspectives ensures that less escapes notice. All of the sources that are mentioned have more to offer than the models, concepts, lists, etc. presented in this section and this is why they also appear in the in the literature review of Chapter Three.

In Kira S. King’s paper from 1998 called “Museum Schools: Institutional partnership and museum learning,” she presents the model Partnership Structure continuum, which she developed to illustrate the “level of collaboration and interdependence … [and] an increased amount of systemic change…” which she observed at the four museum schools she visited as part of her study. When a museum school’s collaboration is described as an Institutional Cooperation, it means that the partners remain separate in relation to the enterprise at hand. The museum professionals teach the teachers about how to use the museum but are not involved in actually producing museum-based coursework for the students or even implementing it at the museum. In a Strategic alliance – Collaboration, on the other hand, the partners enter into a non-hierarchical enterprise by actively working together to develop, produce, implement and evaluate the coursework. In the third type of collaboration, Virtual corporation – Co-Creation, the boundaries between the two organizations are porous to the point of disintegrating; the teachers and museum professionals share in all aspects of the delivery of the coursework, e.g. in King’s example, the museum professionals even shared in the work of grading coursework assignments and products and meeting with the students’ parents at parent-teacher conferences.

In the present context, Kira S. King’s model is mainly interesting as it served as an inspiration for Associate Professor at Aarhus University, Ane Hejlskov Larsen’s chart “Collaboration – three alternatives.” In Larsen’s version, based upon her observations of

1 King (1998B)
2 Op. cit., p. 7. See Fig. 8e, Appendix, Chpt. 8
3 King spells museum schools without a hyphen.
4 Op. cit., pp.3-4
6 See Fig. 8f, Appendix, Chpt. 8. I translated the wording of Ane Hejlskov Larsen’s chart.
partnership collaboration during the *interface* project (2008-2011), she chose not to valorize the three alternatives or to link them together in a chain of development. According to Larsen, none of the partnerships she observed fit the type she called *Partnership* and were therefore classified under either *Facilitation* or *Cooperation.* The terminology of Larsen’s chart is relevant when describing the research data that have to do with the *interface* partnership collaboration.

In 2006, Michelle Phillips headed a research project on museum-schools in the USA, the purpose of which was to discover how the collaboration of museum-schools contributed to the development of new approaches to teaching and learning. Although Phillips observed great variation in how close the collaboration was at the museum-schools she studied, she categorized them under two headings: *Cooperatives* and *Genuine collaborations.*

*Cooperatives* are organizations that help each other perform or carry out separate tasks or missions. There is often a hierarchical relationship between the partners of a cooperative, meaning that one of the organizations provides a service to the other. A hierarchical relationship obviously precludes entering wholeheartedly into a joint enterprise where both organizations share equally in the responsibility of developing it and putting it into practice. In relation to the cases of the present study, it is relevant to analyze the teachers’ and museum professionals’ responses with this perspective in mind. A *genuine collaboration* is very similar to King’s *Strategic alliance/ collaboration* in that its partners’ commitment to their joint enterprise involves sharing in its development, deliverance and evaluation.

Another important point that Phillips makes which is relevant to the present study is that a serious weakness of many partnerships is their unwillingness to acknowledge the gains and advantages to themselves resulting from their collaboration.

In American education theorist Dr. Shirley M. Hord’s “Models of Cooperation and Collaboration,” she compares two modes of co-operation she calls *cooperation* and

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1 Ane Hejlskov Larsen did not publish her observations. However, she presented them at the *interface* seminar for museum directors and school principals, which took place at Kongensbro Inn on Nov. 30, 2010. It was during this presentation that Larsen categorized the partnerships she had observed in this fashion.


3 Op. cit., pp. 7-8. Phillips references different sources, the most important of which is Hord (1986)


6 Ibid. Regarding this failing in some museum school partnerships, Phillips references a 1988 publication by J.I. Goodlad but this publication is not featured in the bibliography of her article.

7 Hord (1986), pp. 24-25
collaboration, two terms which resemble Phillips’ terms cooperatives and genuine collaborations. In Hord’s model, the collaborative development of both modes is split into phases and processes which are juxtaposed in the model, offering an illustration of the differences between the two modes. Especially Hord’s “Collaboration Model” is interesting in relation to the present study.

Finally, Dr. Sanne F. Akkerman’s (University of Utrecht) and Assistant Professor Arthur Bakker’s (Freudenthal Institute) analysis of learning at the boundary is very relevant. Akkerman’s and Bakker’s point of departure is Wenger’s term boundary in relation to social practice and communities of practice and their specific focus is the learning that takes place at the boundary. They identify four types of boundary learning:

1) “Identification
2) Coordination
3) Reflection
4) Transformation”

The four different types of learning indicate an increasing level of collaboration in the partnership and as such are relevant to use when describing and comparing boundary practices between the upper secondary school and the museum.

8.4 Summing up – Regarding learning in collaboration

Wenger’s theory regarding communities of practice and the concepts and models that he developed in conjunction with this theory are analytical tools well-suited to apply in this study. The thinking behind Wenger’s work is that theory and practice cannot and must not be separated; one cannot exist fruitfully without the other. This approach to theory and practice corresponds very well with the approach used in this research, where theory and practice are intertwined in the processes of data gathering and analysis. As has been intimated earlier, none of the inface partnerships actually completely fit Wenger’s definition and description of a community of practice, making some of his theory extraneous to the analysis of these cases. I have selected the sections of his theory that I judge to be most

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1 Ibid. Beginning Process, Communication, Resources/Ow nership, Requirements/Characteristics, Leadership/Control and Rewards are the phases and processes identified in Hord’s model.
2 See Fig. 8g, Appendix, Chpt. 8
3 Akkerman (2011), p. 3. These four types of boundary learning are defined in Fig. 8h, Appendix, Chpt. 8
4 The duality here is similar to the duality Wenger identifies in participation and reification, in learning and in the formation of identity.
useful as analytical tools in the context of my study. Other parts have been down-played, e.g. most of what he writes regarding participation and non-participation, local-global interplay and nexus of multi-membership¹, as these concepts are concerned with aspects of a fully-fledged community of practice.

To offset an overly one-sided approach, other avenues of analysis are explored using the models and concepts presented in 8.3 above. These tools help select and home in on various aspects of the collaborative activities and interactions of the *interface* partnerships and analyze them from a slightly different angle than Wenger. E.g. King’s, Larsen’s and Phillips’ approaches all offer perspectives on the *degree* of collaboration in a partnership and thus illuminate the brokering, artifacts and encounters at its boundary. Hord’s differentiation between cooperation and collaboration and especially her comparison of the *processes* and *phases* of both focus sharply on aspects of the negotiation of meaning, joint enterprise, boundary practices and accountability to the enterprise. Akkerman’s and Bakker’s expand Wenger’s concept of boundary learning by linking it to different levels of collaboration.

**Conclusion: Section II**

The two analytical tools employed as an analytical framework for this research have now been explained thoroughly. The presentation of each also included critical perspectives on the analytical tool in question. It proved difficult to find academic critiques of the GLOs as they were application-oriented rather than academic in purpose and use. It is important to remember, however, that the GLOs were developed on the basis of in-depth research into learning theory and a thorough study of previous research in museum learning and that they were carefully tested in several pilot studies before they were put into operation. Wenger’s concept of communities of practice, on the other hand, is well-established academically and has been critiqued by others doing research in the field. The main criticism seems to be his theory’s lack of position on how power relationships affect a community of practice. In the following section, Section III, the analyses of a few of the cases reveal that there is a hierarchical relationship between the school and the museum that influences their collaboration negatively. However, this can be explained as a

¹ Chapters 6 and 7 in Wenger (2007)
breakdown or rather the inactivity of one or more of the dimensions of practice in the community.¹

¹ Fig. 8b, Appendix Chpt. 8
Section III Analysis and interpretation

In chapters 9 through 13, the layout of the analysis of each case is roughly the same. This procedure helps highlight the similarities and differences between the cases, e.g. how students doing different coursework respond to the same questions put to them in the interviews and, as supplementary information, on the online surveys. Regarding the students’ learning, their interview responses to questions having to do with each GLO are analyzed according to the learning theory implicit in the GLOs and, where relevant, other learning theory and models, e.g. Falk’s and Dierking’s “Contextual Model of Learning”¹ and Dysthe’s, Bernhardt’s and Esbjørn’s theory about dialogue-based teaching². This analysis melds with the analysis of the students’ interview responses regarding how they perceived school learning compared to museum learning, which provides us with an important insight into insider-experiences of the differences between informal and formal learning environments.

The analysis of the data deriving from the students’ responses is kept in mind when analyzing the teachers’ and museum professionals’ responses to questions of similar content, e.g. how the teachers and museum professionals view the students’ learning outcomes and how they understand the differences between the learning environment of the school compared to the museum. The juxtaposition of the analyses of students’ and teachers’ and museum professionals’ responses reveals the consonance and/or disparity of their experience of the learning impact of intrface coursework in the two learning environments within each case and, when viewed in comparison with the analyses of the other cases, across cases.

Of the five cases, the Brigby case is the one that deviates the most, in two interconnected ways: 1) There was no collaboration between the teachers and the museum educator at the museum and 2) the coursework was ready-made off-the-peg teaching material, which had been developed the year before and for which the teachers in this case took no real responsibility. In this respect, the Brigby case resembles a traditional museum-school contact, where a teacher books a short guided tour at a museum for his or her class. This characteristic is interesting because it made it possible to 1) investigate the learning environment created by a museum visit organized in this way and 2) discover if there are any significant differences in i.a. the students’ learning outcomes in this case compared to

¹ Falk (2002), p. 37. See Fig. 7c, Appendix Chpt. 7
² Dysthe (2013)
those of the students in the other cases, where the coursework was the product the teachers’ and museum professionals’ collaboration. Such comparisons may or may not shed light on the link between the teachers’ and museum professionals’ collaboration and the students’ learning experience.

Therefore, Brigby is the first case to be analyzed. It is analyzed very thoroughly and used as a point of reference for the other four analyses though of course it is also important to demonstrate differences and / or common ground, if any, in all five cases. The Brigby case analysis is also a detailed illustration of how the quantitative data from the online surveys functions as supplementary material to the qualitative data from the interviews.

A detailed presentation of each partnership and all field notes describing partnership meetings and students’ coursework at the museum can be found in the Appendix Partnership Introductions and Field Notes. In the same way as the quantitative data, these notes are used as supplementary material in the case analyses.

In the course of the analysis and interpretation of each case, the findings are related to the research questions. Taken together, the analysis and interpretation of these findings can be used by museums and schools to develop the potential of the learning environment that is created in the interface between the formal and informal learning environment of the school and museum, respectively.
Chapter 9: Brigby Gymnasium & HF – Brigby Art Museum

9.1 Analysis Part 1: Student learning outcomes

Brigby is different from the other four cases in that the teachers (Heather and Beth) who were active in the partnership at that time had not actually participated in the development of the RomanticArt program, which they used as coursework for their students. Furthermore, during my interviews with Beth, Heather and the museum educator, Tammy, it became clear that there had been no collaboration between them prior to the visit. This makes the Brigby case especially interesting in relation to my research questions. So an important aim of the analysis of the Brigby case is to discover how this circumstance influenced the participants’ (teachers, museum educator and students) experience of preparing for and working at the museum.

The two classes’ visits to the museum were very similar. I describe the first class’ (1x) visit in some detail; concerning the second class (1z), I only describe the aspects of their visit which vary significantly from the first. This introductory analysis is based on the notes I took during my observations on the days of their visits. These descriptions can be read in Appendix Partnership Introductions and Field Notes.

9.1.1 Students’ interview 1x: Rita, Frederick and Mary

On April 30, seventeen days after their visit to the museum, I met with three students from 1x, Frederick, Mary and Rita, who had volunteered to let themselves be interviewed. At the outset of the interview, when I asked them to speak freely about their museum experience, it became evident that the three students had rather different learning experiences.

Frederick, who had participated in the debate at the end of the coursework,¹ had mostly positive things to say and was quite articulate about his learning experiences; Rita was less enthusiastic. She started on a positive note, possibly because she picked up right where Frederick left off, but very quickly her narrative revealed frustration and a sense that she had not learned anything. Mary’s attitude about her experience at the museum was even more negative about more things, which is obvious in the following quote:

“…and I also think that it was very confusing, … also when we had to choose Argument Cards, because the arguments [we could choose] weren’t arguments that I would ever focus on … we had problems in our group finding out how to get things to make sense and relate them to the painting … because they were on a more advanced level than, 

¹ See Brigby, Appendix Partnership Introductions and Field Notes
I don’t know, at least than what I am used to… but I thought it was fun to try to do things differently, but personally, I would have gotten more out of it if we had done this in class.”

Mary expressed frustration and dismissal.

Mary’s and Rita’s responses made me prick up my ears. Their answers differed from the general tone of the responses I was getting from the students in the other case interviews. More importantly, Mary and Rita seemed to have experienced the museum coursework and visit somewhat differently than Frederick, their classmate. Using the GLOs as a means of analyzing and comparing the three students’ experiences of their own learning reveals that there were some differences between the two girls and Frederick. In tables 9.1- 9.5, the essence of what each student said within each GLO is presented, which also provides us with an overview of how they compare.

As far as GLO 1 (Knowledge and understanding) is concerned, the students’ experiences really only coincided when they talked about the debate at the end of the program, which they said helped them make sense of the work they had done. Mary and Rita were more reserved in their statements, possibly because neither of them actually participated in the debate and felt that the program, especially the Argument Cards, and the tablet PC itself were difficult to use. Regarding subject-related learning, Frederick and Rita both mentioned that doing the RomanticArt program at the museum took place too late in relation to their Danish lessons about National Romanticism several weeks prior to their museum visit. Frederick felt that he would have gotten more out of doing the program if his knowledge of the topic had been fresher in his memory and that he did not know how to use his learning experience at the museum. Mary, on the other hand, did see connections between their work at the museum and both Danish and history, but this insight did not affect her overall rather negative perception of the museum visit. The two girls seemed not to have learned anything noteworthy about the museum whereas Frederick remarked that he had become more aware of how the museum offered information via its signage and other materials. What these three students seemed to have learned most about within GLO 1 was learning itself. They linked seeing objects and having new experiences with remembering better, and thought that visiting the museum was an interesting, active and even relaxing way of experiencing things. Frederick mentioned the fact that their teacher was present, which made him take the experience more seriously, and pointed out that the

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1 Mary and Rita, Table 9.2, Appendix All Tables. The quote is a translation of a few of the lines in the interview transcript that were used to generate the table

2 See Appendix All Tables
museum person (Tammy) was not a teacher, which meant that he did not consider what took place at the museum to be a school lesson. Rita thought that having someone other than their teacher as the person in charge of their museum experience was interesting, but still did not think that she got any new knowledge at the museum or from doing the RomanticArt program. Surprisingly, considering the frustration she felt when working at the museum, Mary articulated two positive discoveries about learning: 1) The fact that the students’ performance at the museum was not being assessed by their teacher created a sense of freedom among them, making it easier to concentrate; 2) All of the students were starting from scratch at the museum, as none of them had tried the RomanticArt program nor worked at a museum before. Furthermore, they were told time and again by Tammy that there were no right or wrong answers to the work they were doing. In Mary’s view, this meant that the students were on equal footing and everyone had equal say in how the work should be done and what their arguments and answers should be.

The essence of their responses within the remaining four GLOs reveals that the students’ experience of their learning and the coursework at the museum was less than favorable. Especially the two girls were unenthusiastic. Under GLO 2 (Skills), the main feeling was that their skills were either unchanged or undermined. Within GLO 3 (Attitudes and values), it is clear that the experience at the art museum did not leave a lasting good impression on the two girls. The difficulties they experienced operating the tablet PC and understanding how to use the Argument Cards were de-motivating, and even Frederick felt that their work at the museum was to no avail because the class had finished the National Romanticism topic many weeks before. Frederick was still the one most favorably disposed toward the museum visit; his recollections of the experience included statements about many things he found motivating: Having fun and how having fun motivates one to learn, the fact that the museum setting promoted active learning, the museum educator’s behavior, other people’s enjoyment and their interest in the task at hand, the teacher’s presence. Many of these recollections fit GLO 4 (Enjoyment, inspiration, creativity) as well; however, Rita expressed very little that could be categorized under GLO 4, and Mary nothing. It is the essence of the students’ answers under GLO 5

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1 Rita’s and Mary’s responses within Skills also reveal positive experiences: Both feel that they finally mastered the tablet PC; Rita says that she, like Frederick, learned to look at a topic from more than one angle; Mary feels that she could see how subject-related theory from school could be used in another context.
(Activity, behavior and progression) that reveals the overall lack of engagement most clearly: The students:

- Did not feel that they worked differently in their groups while they were at the museum despite the fact that they felt they were all equal there, behaved more politely, worked harder and felt hesitant about asking Tammy questions for fear of appearing dull or ill-informed;
- Did not expect to use the museum in the future in connection with schoolwork even though they understood that the way they worked there could be transferred to other learning contexts and that seeing real objects helped them learn;
- Did not expect to visit museums more often even though they realized that visiting the museum could be an enjoyable learning experience.

By amalgamating the essence of all five GLOs with what the students say about the museum as a learning environment (see Fig. 9a, Appendix Chpt. 9), these three students’ vacillation between two rather contradictory views of their activity at the museum becomes very clear.

Before analyzing the findings theoretically, it is interesting to compare a few of these three students’ interview answers with the answers on the online surveys in their class. As examples, three graphs showing the distribution of 1x’s responses on three pre- and post-survey questions within GLO 2 (Skills) have been chosen because they are especially relevant in relation to some of the most insightful of the interviewees’ statements, revealing convergences and discrepancies between the class’ and the interviewees’ answers.

*Graph Brigby1xB2: I will / have become more confident when I have to explain the subject(s) to other orally *

”What I remember best was the Debate at the end, where we had to use the arguments – in our own words – we had to use what we had learned … when you have to put it in your own words, I think that helps you learn.” (Frederick, who participated in the Debate)

”… it was very confusing … also when we had to choose Argument Cards, because the arguments [we could choose] weren’t arguments that I would ever focus on … we had

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1 See Table 9.6 in Appendix All Tables
2 Graphs Brigby1xB2, Brigby1xB3 and Brigby1xB6, Appendix Chpt. 9
3 E.g. Frederick’s observation “When you have to put it in your own words, I think that helps you learn” and Rita’s statement “I don’t feel that I gained any new knowledge.”
problems in our group finding out how to get things to make sense and relate them to the painting.” (Mary)

This is interesting because Graph Brigby1xB2 shows a change from slightly optimistic expectations regarding becoming more confident about explaining the subjects to others to a rather clear demonstration of the opposite.

Although Frederick felt he had learned something from the debate, possibly because he had been in one of the two groups that participated in it, Mary was frustrated by much of the task they were set at the museum and the Argument Cards almost seemed to have the opposite of effect of inspiring self-confidence. Here it was Frederick, who veered away from his classmates’ general response, which might indicate that other students in the class had experiences similar to Mary (and Rita).

Graph Brigby1xB3: I will gain / gained insight into how the museum presents knowledge about objects through exhibits

"...I don’t feel that I gained any new knowledge. I didn’t leave thinking, Wow, today I learned a lot of new stuff.” (Rita)

ST: What did you think of the museum’s staging of the exhibition … how did all that affect you?

"I thought it was kind of weird [giggle]. I really didn’t care one way or the other. I couldn’t really understand it … I don’t know if we were supposed to feel our way into the painting, but it didn’t work for me.” (Mary)

Graph Brigby1xB3 indicates that before their visit, ten out of eleven students were optimistic about gaining insight into how the museum presents knowledge about objects through exhibits. On the Pre-survey, no students ticked “Not very likely” or “Not at all.” After their experience at the museum, the picture changed, and five students ticked “Not very likely” or “Not at all” in the post-survey.

Both of the girls’ responses reflected this shift, and although Frederick realized that one can learn a lot at a museum if one makes an effort to read the signs, etc., he did not expect this realization to change the way he would behave in museums in the future.

Graph Brigby1xB6: I will / have become aware of how I can use the museum in relation to schoolwork

"I wanted to be active down there [at the museum] but I didn’t think that I had to be active to learn something … I didn’t think we were there to get new knowledge.” (Rita)
ST: Can you see how you could use this in relation to what you learned in Danish?

"No, not in Danish, I don’t think so. Well, maybe a little. [Thinks a bit] Well, it’s not something I would ever write if we had an assignment about it. I would never write about this, but I can see that maybe you could.” (Mary)

ST: Do you think you will be more likely to use the museum to get information for an assignment at school?

"No, I don’t really think so. I think I would be more likely to use the library in that case. I wouldn’t use the museum for that.” (Frederick)

Graph Brigby1xB6 differs from what three students answered in their interview. The graph shows that after participating in the coursework at the museum, more than half (seven) of the students felt “pretty sure” that they had learned how to use the museum in relation to schoolwork.

Rita’s, Mary’s and Frederick’s answers indicate a different opinion. Rita did not even expect to get new knowledge at the museum, and though Mary admitted that there might be some use for it in Danish, she would never use it herself. And Frederick said that he would not choose to use the museum as a knowledge base but go to the library instead.

The deviations in their answers compared to their classmates’ answers might be caused by their participation in the interview, e.g. listening to and being influenced by each other's viewpoints and/or my questions and comments or, more importantly, having time to consider these questions more in depth than when they were ticking off boxes on the questionnaires. It is also very likely that their answers indicate that the visit to the museum was not experienced as an integral part of their Danish and history lessons but more as a slightly unnecessary extra activity that was not very relevant to their schoolwork.

The two graphs “Graph Prep” and “Graph Eval” corroborate the three interviewees’ account. Fewer than half (five) of the eleven students from 1x who answered both surveys checked off “Subject-related work in the subject(s) of the coursework”. Otherwise, according to their answers, the main preparation of their visit was limited to checking out the museum’s website (eight students ticked this option) and practical preparations such as working out which bus to take to the museum (eleven students chose this option). In “Graph Eval,” it is clear that there was very little evaluation of the museum visit; the

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1 See Graph Prep and Graph Eval, Appendix Common Graphs (1x is the second column of numbers from the left)
The highest number of ticks, six, were given to the answer “Oral evaluation of the visit to the museum.” Otherwise, only “Your teacher(s) has/have remarked on the class’ behavior at the museum” received more than one tick or no ticks at all. The fact that the summated bar of the Post-visit graph shows only eleven ticks compared to the twenty-five ticks of the Pre-visit graph might also indicate that little attention was given to evaluating the coursework in class.

To better understand 1x’s learning experience at the museum, theory will be brought to bear on the following important and interconnected aspects of their learning. Each of these aspects relates to one or two GLOs, as indicated below.

1) Prior mental models (related to GLO 1 and GLO 2)
2) Expectations and motivation (related to GLO 3)
3) Learning environment as provided by Beth and Tammy (related to GLO 4 and GLO 5)

These three aspects were significantly influenced by the behavior, actions and communications of Beth and Tammy, the latter of whom defined and was in charge of the students’ learning activities at the museum.

Ad 1) Prior mental models (e.g. knowledge and skills)

It goes beyond the scope of this study to give a thorough account of the complex topography of the students’ (and teachers’ and museum professionals’) mental models prior to their visit at the museum. However, among the qualitative data and supported by the data from the online surveys, there are a few things that need special mention as they both tell us something about the students’ “prior mental models” but also pave the way for the coming discussion of the collaboration between Beth, the teacher, and Tammy, the museum educator.

According to Danish learning theorist Mads Hermansen, students always learn at the edge of what they already know. The learning process is optimized for learners when they initially feel a sense of familiarity or recognition in relation to the subject matter to be learned. Hermansen claims that students should be met with challenges that compel them to “toil and moil” in their learning process because then they

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1 These two graphs also indicate that there was no communication between the teacher, Beth, and the museum educator, Tammy, prior to or after the museum visit.
2 Hermansen (2003), pp. 69-70. Hermansen claims that the best learning takes place in the student’s zone of proximal development, a concept he adopted from Lev Vygotsky’s theory.
must experiment, reflect and make choices. The trick is to make sure that the gap between what the students know and the level of difficulty of the task they are set to do does not become too wide, as that will have the opposite effect on their learning.

An example of such “toil and moil” was working out how to navigate and use the tablet PC. Especially Rita and Mary mentioned how difficult it was, but in the end, they learned how to use it and Mary reflected that using the tablet gave them subject-related knowledge and that it was actually fun to use. On the other hand, Rita’s and Mary’s comments regarding the Argument Cards indicate that in their case, the challenge of using them productively was too hard. Especially for Mary and her group, this “gap” resulted in frustration and confusion and, to a certain degree, dismissal or rejection of parts of the program’s content. Also Frederick felt that it was difficult to apply his prior knowledge about National Romanticism because the lessons they had had on that topic had taken place many weeks before the visit to the museum.

Ad 2) Expectations and motivation

“To be motivated means to be moved to do something” is Ryan’s and Deci’s succinct definition of motivation, which they develop further by explaining that there can be different levels of motivation (more or less motivation) and different orientations of motivation, which have to do with the “why of actions.” Ryan and Deci distinguish between intrinsic and extrinsic motivation; a person’s intrinsic motivation is born out of his or her own personal interest, inquisitiveness and desire to explore and engage in activities for no other reason than the personal enjoyment and reward of putting one’s knowledge and skills to use and perhaps improving them. Intrinsic motivation exists within the individual but is also fuelled by his or her engagement with the aforementioned activities. There is always an element of free choice or self-determination at the root of intrinsic motivation. An example could be a student who had such a rewarding experience while doing coursework at the museum that she organized a visit to the museum for her family afterwards, wanting to share an interesting, engaging activity with them. Intrinsic motivation can be enhanced in social contexts, e.g. group work at the museum, by interaction or collaboration that nurtures the sense of being competent, in control of the situation and able to exert influence on it. Positive feedback from others while working

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1 Ibid. “Toil and moil” is how I translate Hermansen’s concept of “møje.”
2 Ryan (2000), p. 54
3 Ibid.
4 Op. cit., p. 56

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together with them to carry out a challenging but not overwhelmingly difficult task is also an important contributor to an individual’s intrinsic motivation as well as having a sense of ownership over how it develops and its results. Intrinsic motivation is considered one of the most powerful engines of learning.¹

An individual is extrinsically motivated when he or she engages in an activity in order to attain “some separable outcome.”² One student might engage in an activity in order to avoid sanctions (e.g. a bad grade or a reprimand from the teacher) while another student engages in the same activity because he realizes that doing well at it will further his “career” as a learner, e.g. by giving him useful knowledge for the future. In both examples, the motivation is caused by the perceived instrumental value of the activity; however, the first example involves submission to authority and discipline, whereas the second involves a degree of personal choice.³

Frederick’s, Rita’s and Mary’s responses gave a muddled picture of what type of motivation triggered their activities at the museum, which is also obvious in Fig. 9a. On the one hand, the students’ learning activity at the museum was extrinsically motivated. They experienced the work as part of their schooling and as such something which they were expected to participate in as a formal learning activity over which they had no control. They were sent willy-nilly on a field trip to a local museum by their teacher, Beth, who accompanied them there. The topic of the coursework at the museum, National Romanticism, was (or rather, had been) part of their syllabus at school and was also one of the topics they could choose to write about in their Danish-history paper, making the program especially relevant for those who were planning to do that. The students’ visit started with a situation similar to traditional classroom teaching when Tammy presented the RomanticArt program and the tablet PC to them. Furthermore, at the museum, the RomanticArt program presented them with a lot of material they were urged to read in order to formulate arguments to support their choice of statements and to use in the debate. The program on the tablet was challenging to the point of being too difficult but it was necessary to master it in order to do the task they were expected to do.

On the other hand, the field trip was not an integrated part of their lessons and there was no mandatory product to be handed in. So although this was a school field trip, the students knew from the outset that their performance was not going to be assessed.

¹ Csikszentmihalyi (2007), p. 147
² Ryan (2000), p. 60
³ Ibid.
Perhaps this partly accounts for the relatively optimistic expectations that many of the GLO Pre-survey graphs show. Furthermore, during their visit, they were told multiple times by Tammy that there were no right or wrong answers, and that it was up to them how they decided to use the information available on the tablet PC and in the other museum materials to interpret their paintings and prepare their arguments. In other words, they were free to explore and interpret as they saw fit, would not be assessed and they were responsible for their own learning: These are characteristics of intrinsically motivated activities within an informal learning setting.

These two oppositely directed approaches to the learning activity were reflected in the interview students’ responses and I think also in the GLO pre- and post-visit graphs, of which nearly all reveal more optimistic expectations than remembered experience.

Beth’s actions and communications to the students played an important part in their expectations of the museum visit and coursework and their motivation while they were there. Tammy also influenced their motivation while they were at the museum. A third factor that seemed to have had some influence on the interview students’ motivation was the change in their relationship to Beth, who relinquished her authority to Tammy while they were at the museum, and to Tammy, the expert at the museum. This will be discussed in more detail below.

Ad 3) Learning environment (enjoyment, inspiration, behavior)

The way in which the students perceived Beth’s and Tammy’s authority, expertise and behavior tells us something about what kind of learning environment the two women created for the class. Was it relaxing or did it make them feel tense? Was it challenging or boring? Inspiring or disengaging? Enjoyable or frustrating? Did they feel indifferent or engaged? The interesting thing is that according to the interview students, “yes” is the answer to all these questions, despite the fact that they seem contradictory in content. The

1 Graphs Brigby1xA1-E4 can be seen on the left hand side of the graphs BrigbyTotalA1-E4, Appendix Chpt. 9.

2 There are two exceptions: In Graph BrigbyTotalD1, three students ticked “Definitely” about being inspired by doing the coursework at the museum (GLO 4 Enjoyment, inspiration, creativity) in the post-survey, compared to one student in the pre-survey. However, there is also a student who has ticked “Not at all” in the post-survey, while none had done so in the pre-survey. In Graph Brigby1xB6, eight students ticked either “Definitely” or “Pretty sure” at about becoming aware of how to use the museum in relation to schoolwork (GLO 2 Skills) in the post-survey, compared to seven in the pre-survey; one student moved his answer from “Not very likely” in the pre-survey to either “Definitely” or “Pretty sure” in the post-survey. However, there are fewer students (only one) who ticked “Definitely” in the post-survey, compared to three in the Pre-survey. See Graphs BrigbyTotalD1 and BrigbyTotalB6, Appendix Chpt. 9.
interview students realized that Tammy was the expert regarding the paintings and the
topic National Romanticism and regarding how to use the tablet PC, but they did not go to
her first with questions about these things. Beth did not have the same expertise and
authority as in school, something the students noticed – Mary even remarked that at the
museum, Beth did not know more than the students – but she was the one the students
went to first. Both girls said that they did not want to ask Tammy questions for fear of
appearing dull or poorly prepared. Frederick mentioned that the class acted differently at
the museum because it was a new place (e.g. they were more polite); he also said that even
though Beth was not the expert, he took the program more seriously because she was there
and he still felt they were being assessed because of her presence. At the same time,
working at the museum did not feel like a lesson because he did not think of Tammy as a
teacher and did not see the relevance of the visit to schoolwork. Rita said that it was more
relaxing to be at the museum than at school and Mary echoed her by mentioning that not
being assessed made them feel freer and better able to concentrate.

In the same breath, all three interview students emphasized that Tammy did a good
job and was enthusiastic and helpful. Rita mentioned that it was fun being taught by her.
All three seemed to grasp the structure and purpose of the program when they experienced
the debate, which tied up the loose ends for them. None of them seemed to have expected
their teacher to involve herself in the program at the museum even though the two girls
said that they felt more comfortable asking her questions about it than asking Tammy.

Besides all of this, it is evident from their responses that the program itself, besides
being too late in relation to what they were doing at school, was also perceived as being too
difficult. These factors, added to their changeable opinions about Beth and Tammy, reveal
a learning environment in which it could be said to be relatively difficult to navigate. It is
important to keep in mind, however, that the students might just have taken this
ambiguous situation in stride. Not having a recently active knowledge-base to draw upon
while at the museum nor having clear expectations of what they were to do there or gain
from working there were not necessarily priorities or even considerations they were
bothered about in relation to this type of field trip.

Nonetheless, the quantitative data suggest that on the whole, 1x’s remembered
experiences did not live up to their expectations. Fig. 9b and 9c illustrate the distribution
of the students’ ticked responses on the pre- and post-survey questionnaires, respectively.

\[1 \text{ See Fig. 9b and Fig. 9c, Appendix Chpt. 9} \]
The distribution of the X’s clearly illustrates the shift from expected learning outcomes to remembered learning experiences.

Frederick’s, Rita’s and Mary’s – and the rest of their class – learning experiences at the museum can also be described by inscribing them in Falk’s and Dierking’s “Contextual Model of Learning,” especially two of the Contexts of the model: 1) “The personal context” and its key factors “Motivation and expectations,” “Prior knowledge, interests and beliefs” and “Choice and control,” and two of the key factors of 2) “the physical context:” “Advance organizers” and “Reinforcing events.” It was precisely Frederick’s “prior knowledge” that he maintained was useless because it was too far back in his memory, and Mary felt that her prior experience did not harmonize with the task she was set, e.g. the Argument Cards outlined arguments which she could not recognize from her own life and felt that she herself would never use. The students were not prepared for the visit, nor would it seem that their experiences were reinforced in following lessons in Danish and history.

Like Ryan and Deci, Falk and Dierking distinguish between intrinsic and extrinsic motivation. In their view, an important factor in intrinsic motivation is “Choice and control,” meaning self-determination and being in charge of one’s own learning. The interview students’ responses indicate that, on the one hand, they felt that they were responsible for their own learning at the museum and even viewed that state of affairs with a certain amount of apprehension (Mary). On the other hand, in order to do the task they had been set, they were required to work with the tablet PC and elaborate teaching materials, which limited their self-determination and feeling of being in charge. Furthermore, their teacher was present at the museum, drawing the environment of school and classroom with her into the museum although she remained passive and stepped down from the role of being an expert and an authority.

9.1.2 Students’ interview 1z: Aretha, Drew and Martha
In the afternoon of May 2, eight days after their visit to Brigby Art Museum, I interviewed Aretha, Drew and Martha at their school. Their responses to my questions were different from Frederick’s, Rita’s and Mary’s in a number of ways but the main difference was that

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1 Fig. 7c, Appendix Chpt. 7
2 Falk (2000), p. 178. See Fig. 7d, Appendix Chpt. 7. Lynn Dierking had changed these three key factors to four in her presentation at the research seminar for PhD students at the University of Southern Denmark in March 2013 to: Prior Knowledge & Experience, Prior Interest, Expectations & Motivations and Perceived Choice & Control

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they were essentially more positive in their reflections about the whole learning experience at the museum. These reflections are reproduced in condensed form in Fig. 9d.¹

A comparison of Fig. 9a and Fig. 9d illustrates similarities and dissimilarities between how the two sets of interview students experienced their learning activity at the museum. They are in agreement about many things: the pleasantness of the relaxed atmosphere at the museum; that it was nice not be assessed; that they enjoyed themselves and that made the experience memorable; that everyone was equal at the museum and had equal say; that they experienced free-choice learning (self-determination); that there were connections between the museum program and learning at school. However, while 1x tempered each of these positive reflections with disappointed comments, the only truly disappointed observations by the three 1z students were that not all groups were given the opportunity to present their arguments at the museum and that being passive onlookers during the debate was not a gainful learning experience. Despite the preponderance of favorable opinion, 1z interview students, like their schoolmates in 1x, did not foresee visiting the museum as a leisure time activity.

It is remarkable that the responses of the interviewees from the two 1st-year classes doing the same program at the museum and within the same learning context at school (as preparation for their Danish-history paper) differ so much in opinion and tone. Comparing Aretha’s, Drew’s and Martha’s responses to their classmates’ answers on the post-survey is a way of discovering whether they reflect the reaction of the whole class or whether these three students were especially delighted with the experience at the museum. After this, I compare 1x’s and 1z’s online post-survey responses.

It is not difficult to find graphs² which confirm the three interviewees’ responses. The second graph shows a slight discrepancy between their responses and the class’ post-survey responses.

Graph Brigby1zB1: I will / have become more aware of how I can use museum object to communicate subject-matter

In this graph, 84% of the 1z students ticked “Definitely” or “Pretty sure” in response to the question in the post-survey about becoming more aware of how museum objects can be used to communicate subject-matter. To my question about using the museum for this coursework, Martha replied thoughtfully:

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¹ See Fig. 9d, Appendix Chpt. 9. The content of Fig. 9d is an amalgamation or condensation of the three 1z students’ interview responses, as presented in Tables 9.7 – 9.12, see Appendix All Tables
² Graphs Brigby1zB1, Brigby1zB8 and Brigby1zBE4, Appendix Chpt. 9.
“But of course it was different, because we sat on the floor and discussed things and looked at the painting and walked around to look at the other paintings because we knew we could use them as sources to substantiate stuff.”

When asked directly if they could use what they learned at the museum for schoolwork, Aretha replied:

“We have been working with a chronology course, and have gone on to the next [literary] period, so we haven’t talked about it [what they learned at the museum] anymore. But I think I would have been able to use it ... I think we would have to look into other things about it [the painting] or have the documents [the photocopied historical sources]” (Aretha)

Later, I summarized their comments by saying:

ST: Okay, so then you definitely gained some subject-related knowledge … you haven’t necessarily been able to use it since then, but you certainly got something out of it. They all nodded and said yes. Aretha continued by commenting:

“An impression of the period [National Romanticism].”

The three students’ responses give us an idea of the reasons for the distribution of their and their classmates’ questionnaire answers.

*Graph Brigby1zB8: I will discover / have discovered that our group work functions / functioned differently at the museum that it does at school*

It would seem that Martha, Aretha and Drew belong to the large minority of students in 1z who either ticked “Definitely” (one student) or “Pretty sure” (six students) on the post-survey question asking them if they noticed that their group work functioned differently at the museum than at school. However, their first reaction to the interview question about group work was that they were very used to working in groups in their class, implying that there was little difference between their group work at school and at the museum, which seems to be what the majority of the students in 1z experienced.

“In our class we do an exceptional amount of group work … and I really think that it worked well down there [at the museum] too.” (Aretha)

As we got deeper into our conversation about their group work at the museum, they recalled different circumstances at the museum that nevertheless had an impact on it.
“I felt that the group work [at the museum] made it more possible for a person to be right and to be allowed to have a personal opinion … I don’t have a very personal relationship to the people I worked with in my group, but I really think that I could talk with them there because we were more allowed to say what we felt, whereas if we were working together in math and one of us said something wrong, then you would have to correct that person or be corrected yourself, which is kind of an annoying situation, whereas here [at the museum] it was okay to say pretty much anything. So I think we were a little more relaxed, I really think that it was easier to talk with the others during our group work.” (Aretha)

ST: Did you talk together in a different manner [than at school]?

“We were a little bit quieter than normal … I think that was because we were a new place and we wanted to make a good impression and behave well. The room wasn’t very big either, and normally we use the whole school.” (Martha)

Drew also mentioned that he and his group were quieter and more polite when Tammy came by or they asked her questions because this was the first time they had met her and they were not as familiar with her as they were with Heather.

The majority of students (twelve out of nineteen) in 1z who ticked “Not very likely” and “Not at all” on the post-survey questionnaire may have had the same immediate reaction to this question as the three interview students had when we first starting talking about how or if their group work functioned differently at the museum than at school.

*Graph Brightly1z_E4: I will be / am more likely to visit the museum in my spare time after completing this coursework.*

In this graph, we see that seventeen of the students ticked “Not very likely” or “Not at all” on the post-survey questionnaire when asked if they were more likely to visit the museum in their spare time after completing the coursework. Compared to their answers on the pre-survey questionnaire, they had become even less likely to visit the museum after doing the coursework. This attitude was also reflected in the three interview students’ responses although the interview context made it possible for them to qualify their answers.

ST: Is [the museum] a place you think you might visit in your spare time, with your family or a friend or a boyfriend or girlfriend?
“If there was an event or something, I might go – I might go even if there wasn’t an event, but then it would have to be with my family, and then I don’t think that it would be me that took the initiative to go … but I think I would become more engaged if there was something I could DO there, be part of an event or something…” (Aretha)

When I asked Drew directly, he said:
”If there was an event, I might … kind of like what we did this time.”
ST: But that was for school.
“Well, if it was there in my spare time, I might go, but otherwise I wouldn’t.”

When I asked Martha, she replied:
“There would have to be something or other, for example like Hjerl Hede,¹ where they do role plays and stuff like that …”
Aretha interrupted:
“Do things you can participate in …”
Martha rounded her thought off:
“Yes, exactly, something you can be a part of. I wouldn’t go there [the art museum] just to look at a painting in my spare time. If I did, it would have to be because I had to look for something specific.”

On the one hand, the students express a disinterest in visiting the museum in their spare time but on the other hand, they state that they would if there was something special going on at the museum in which they could actively participate.

9.1.3 Comparison – 1x and 1z
To a certain degree, as far as this study is concerned, 1x and 1z can be seen as twin classes. Therefore it is especially interesting that their learning experiences were dissimilar in many important ways. It is interesting that it did not seem to be a problem for Aretha, Drew and Martha that they had not worked with National Romanticism as a topic right before their museum visit. However, if we look at Graph Prep,² we see that thirteen out of nineteen students in 1z actually ticked the answer option “Subject-related work in the subject(s) of the coursework,” which indicates that their teacher reviewed the topic with them in

¹ Hjerl Hede is an open-air museum, see website.
² See Graph Prep, Appendix Common Graphs (1z is the first column of numbers in the graph)
preparation of their visit. Moreover, Graph Eval\(^1\) reveals that fifteen of the students ticked “Oral evaluation of the visit to the museum,” which probably means that their teacher made a special point of evaluating the visit with her class.

A comparison of the graphs\(^2\) showing how the two classes answered the questions having to do with the GLOs on the online questionnaire corroborates – to a certain extent – what we have learned about how the 1x and 1z interview students recollect and narrate their rather different learning experiences at the museum. In the following, the percentages deriving from 1x’s and 1z’s post-survey questionnaire responses “Definitely” and “Most likely” within each GLO are presented to show how or if these numbers confirm or veer away from what the interview students said. Only percentages of answers that relate directly to the interview students’ responses are included.\(^3\)

Within GLO 1 (Knowledge and understanding),\(^4\) it is clear from the post-survey numbers that 1z rated their experience at the museum higher – by ticking “Definitely” or “Most likely” – indicating that proportionately more students in 1z than 1x felt that their knowledge and understanding increased regarding questions A1, A3 and A4, which can be seen if Fig. 9e.\(^5\) The disparity in percentages in Fig. 9e confirms the responses of the interview students in 1x and 1z, respectively. Frederick, Rita and Mary had difficulty connecting the results of the RomanticArt coursework to their subject-related knowledge from school because so much time had passed since they had worked with the National Romantic period in class, and if the rest of the class also felt this way, that might account for the lower percentages in A1 and A3. 1z might have experienced the subject-relatedness of the contents of the RomanticArt program on the tablet PC and teaching materials more clearly because they were better prepared for it and an effort had been put into evaluating the coursework with them (see Graph Prep and Graph Eval).

In both classes, there was also a great majority of students (81% in 1x and 74% in 1z) who felt that they had become aware of how knowledge is interpreted differently at the museum and in school (Q. no. A5). This is not surprising, considering that the RomanticArt program and their work were linked to original paintings in a museum.

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\(^1\) See Graph Eval, Appendix Common Graphs (1z is the first column of numbers in the graph)

\(^2\) See Graphs BrigbyTotalA1-E4, Appendix Chpt. 9

\(^3\) For example, questions A6 and A7 were not discussed during the interviews. Therefore they are irrelevant in the context of this comparison.

\(^4\) See Graphs Brigby1x & Brigby1z A1, A3 and A4, in BrigbyTotalA1-E4, Appendix Chpt. 9

\(^5\) See Fig. 9e, Appendix Chpt. 9. In Fig. 9e, “Q.no.” refers to the number a given question has on the questionnaire and the graph. E.g. within GLO 1, the questions are numbered A1-A7.
Within GLO 2 (Skills), the picture becomes less variegated. 1x and 1z are in more or less accord regarding

- becoming more aware of how to use museum objects to communicate subject-matter (over 80% in both classes) (Q. no. B1)
- becoming more aware of how they learn by working at the museum and with museum objects (approximately 15% in both classes) (Q. no. B4)
- becoming better at formulating subject-related questions by having to put them to museum employees (under 10% in both classes) (Q. no. B5)
- becoming aware of how to use the museum in relation to schoolwork (approximately 70% in both classes) (Q. no. B6)
- becoming better at working in groups (approximately 17% in both classes) (Q. no. B7)
- discovering that group work functions differently at the museum than it does at school (around 37% in both classes) (Q. no. B8)

According to the museum’s website, the ambition of the RomanticArt coursework is to “open up several perspectives and interpretations of [the artist’s] Golden Age landscapes, so the students discover the deliberations and experiences … that motivated the artist … and influenced Danish Golden Age art,”1 and the museum provides them with the resources judged necessary to fulfill this ambition. The high percentages in B1 and B6 indicate that 1x and 1z felt that had been able to talk about or understand the Golden Age paintings. However, the students seemed not to have used Tammy as a resource (B5). More importantly, the students’ B4 answers indicate that their learning activities at the museum did not make them become more aware of how they learn.2 The reason for this might be that the RomanticArt coursework initiates activities that are similar to what the students do in school: Reading, analyzing, interpreting, discussing, working in groups and presenting their findings orally. Another reason might be that the both classes were too

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1 My translation. Due to the use of pseudonyms in this dissertation, there is no link to the website.
2 This differs from what Mary, Frederick and Rita (1x) said about learning in their interview. Within GLO1 (Knowledge and understanding), they all reflected on their learning. To a certain extent, I think this was due to the interview situation and being asked specifically about their learning.
pushed for time to reflect about their learning. However, as we have seen, the interview students in both classes, when given the opportunity in the interview to reflect on their experiences at the museum, made comments that revealed that they had, indeed, learned about learning.

Especially question B3 under GLO 2 (Skills) elicited very different answers in the two classes. 84% of the students in 1z felt that they had gained insight into how the museum presented knowledge about objects through exhibits compared to just over half of the students in 1x. Once again, this could be due to the fact that 1z was better prepared for their visit. From the Brigby Field Notes we know that Tammy pointed more paintings out to the 1z students and explained the RomanticArt coursework more thoroughly to them, and that Heather was more actively involved in facilitating her students’ work at the museum; these factors may explain the higher percentage in 1z.

As far as GLO 3 (Attitudes and values), 1x’s and 1z’s answers on the post-survey questionnaire revealed that a slightly higher percentage of students in 1x (27%) felt that they had experienced something new about their classmates
t6 compared to 1z (16%). Neither percentage is very high, which is in accordance with how both classes responded to questions B7 and B8 above. On the whole, it seems that the students’ behavior and their group work at the museum were more or less the same as they were in school. However, the qualitative data give us a more nuanced picture, e.g. Frederick’s and Drew’s similar statements about the class being quieter and more polite at the museum or all six interview students’ remarks about how not being assessed affected their behavior and how they worked together.

Proportionately more students in 1x (three students, corresponding to 27%) than in 1z (5%) felt that their attitude to how they learned in school had changed. Considering how they answered B4 above, it seems slightly surprising that almost a third of the students in 1x answered in this way. When we check what Frederick, Rita and Mary said about this, however, we see that they were very articulate about the effects of not being assessed at the museum.

Regarding question C5 under GLO 3 (Attitudes and values), three (out of eleven) students in 1x indicated that they had discovered something new about their teacher compared to only two (out of nineteen) students in 1z. This seems to support the

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1 Q. no. C1
2 Q. no. C3
qualitative data: We learned that 1x’s teacher Beth’s behavior changed noticeably in that she relinquished her authority and remained more or less passive while the class was at the museum.

A comparison of how the two classes answered the GLO 4 (Enjoyment, inspiration, creativity) questions shows us that approximately half of the students in both groups felt that being at the museum made it fun to do the coursework.\(^1\) 53% of the students in 1z felt it was inspiring for them to be at the museum when they were doing their coursework compared to 82% of the students in 1x\(^3\). The D1 and D2 percentages are slightly at odds with what we learned from the interview students in 1z and 1x, respectively. Mary and Rita (1x) voiced frustrations that would certainly have blocked feelings of inspiration. Moreover, all of the interview students said that it was fun working at the museum, though only half of the students in both classes seem to agree with this recollection. The six interview students were possibly influenced by the interview situation and, out of loyalty to their classmates and their teachers, might possibly have wanted to project a positive image of the experience.

Fewer than 10% of the 1x students noticed that it was easier to ask the museum educator questions than their teacher,\(^4\) compared to 26% in 1z. The former harmonizes very well with what we learned from the interview students, who felt shy about asking Tammy questions. Drew (1z) said that he noticed that he and his group were more polite when they approached Tammy, otherwise he and Aretha and Martha did not experience any real difference between asking Tammy and asking their teacher Heather. The higher percentage in 1z than in 1x might be due to the fact that Tammy gave the students in 1z a more thorough presentation of the paintings, the RomanticArt program and the tablet PC, which might have made them feel less hesitant about asking her questions.\(^5\)

Moving on to GLO 5 (Activity, behavior and progression),\(^6\) Drew, Aretha and Martha (1z) said that they were quieter and more polite at the museum because they wanted to make a good impression. A similar recollection may also have motivated 58% of the students in 1z to indicate that they noticed that their groups and classmates acted differently because they were at the museum. A much higher percentage of students in 1x

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\(^1\) Q. nos. D1-D5
\(^2\) Q. no. D2
\(^3\) Q. no. D1
\(^4\) Q. no. D3
\(^5\) See Brigby, Appendix Partnership Introductions and Field Notes
\(^6\) Q. nos. E1-E4
(82%) indicated the same, perhaps because they were not so well-prepared for the visit nor were given quite so thorough an introduction to the museum and the coursework and were therefore less at ease, or perhaps because they, as Frederick remarked, were in a new environment and felt they should behave politely. The gap between the percentages in the two classes is repeated in question E2, where 73% of the students in 1x indicated that they remembered making an effort to make a good impression on Tammy, while only 47% of the students in 1z had a similar experience.  

Neither class had become more inclined to use the museum for schoolwork after completing the coursework at the museum; in 1x, 27% of the students indicated that they were more likely to do this, which was the same percentage of students’ answers as in the Pre-survey. Only 16% of the students in 1z felt that they would be more likely to use the museum for schoolwork, which represents a slight drop compared to their answers on the Pre-survey.  

In continuation of this tendency, only 9% or one of the students in 1x felt that he or she had become more likely to visit the museum in his or her spare time compared to 91% who ticked “Not very likely” or “Not at all” with a preponderance of ticks (64%) in the latter. None of the students in 1z thought they would visit the museum in their spare time after completing the coursework at the museum.  

In a very general way we have established that 1x recalled their learning experience at the museum in somewhat less favorable terms than 1z. However, both sets of interview students and their classmates had critical and conflicting opinions and recollections about their learning experience.  

Let us once again focus on the three aspects of learning we investigated in relation to 1x: Prior mental models, expectations and motivation, learning environment, but approach them from a new theoretical perspective, as a way of strengthening and enriching our understanding of them. Applying theory about identity to the students’ narratives about their learning experience at the museum will give us an idea about their agenda, which is a concept that interfaces with the first two of the above-mentioned learning aspects and largely determines how they interact with a learning environment, and what they take note of and learn from it. According to John Falk and Theano Moussouri, a museum visitor’s agenda consists of two things: 1) the motivation he has for visiting the museum and 2) the

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1 Q. nos. E1 and E2  
2 Q. no. E3  
3 Q. no. E4
strategies he employs while he is there. The students’ agenda for visiting the museum is not like that of a person visiting of his own free will; it is nevertheless important to take into consideration when attempting to make sense of their survey and interview responses.

Furthermore, although John Falk’s book Identity and the Museum Visitor Experience mainly deals with visitors who visit museums of their own free will, his definition of museum visitor identity is relevant in this context as well.

“… identity is the “vehicle” by which perceptions of personal needs and motivations can be matched with perceptions of institutional capacities and affordances.” Individuals have multiple identities; e.g. Frederick as a son, brother, boyfriend, gas station attendant, 1st year upper secondary school student, straight-A student, computer club member, etc. The social context he is in determines which identity or “sense of self” is dominant and active. Put somewhat simplistically, it is his identity as a student that is dominant when he visits the museum and it is this identity that prepared his personal agenda for that visit. Identity and agenda are bound tightly to each other and both are tied to context.

The teachers of the two 1st year classes decided to go on the field trip to the museum, so the students’ motivation for visiting the museum was a given. The “capacities and affordances” of the museum and the RomanticArt program were not familiar to them, but their strategy was to apply what they knew (prior mental models) as well as they could in order to make sense of them. The students’ contradictory views regarding their learning experiences at the museum reflect the challenge of reconciling their agenda with e.g. the content, purpose and form of their activities at the museum.

Another productive way of looking at this is by applying Wenger’s theory about communities of practice (CoP). The classroom can be seen as a CoP, where the joint enterprise and the rules of conduct are well-known to all the participants, students and teacher alike. They have a shared, continuously evolving repertoire of stories, actions and discourses and they are always working to maintain and re-negotiate the complex web of social relationships between the students and between the students and their teacher.

The museum setting was unfamiliar territory for the students. Although many of them might have visited a museum before, doing coursework that involved using the museum.

\[1\] Falk (1998), p. 106
\[2\] Falk (2009), p. 77
\[3\] Op. cit., p. 75
\[4\] Op. cit., p. 76
and its objects was a novel experience for them. The museum was a new CoP, in which they had very little time to engage in the joint enterprise or negotiate its meaning. The joint enterprise in this case was the educational program their teacher had booked for them to do at the museum. As such, there was not much “joint-ness” in it, as the program itself was non-negotiable. What they could negotiate was how to interact with each other and with the museum when doing the program. As newcomers, they looked to each other, their teacher, their surroundings and Tammy to decipher how best to interact and behave. On the one hand, there were several recognizable artifacts, discourses and processes that could ease their trajectory into this new setting: The chairs placed in rows for them to sit on while Tammy stood in front of them to teach them about how to do the coursework, being taught, being quiet listeners, being split into groups and told to do group work, doing group work, reading and discussing resource materials, answering questions, preparing arguments, etc. Even the set-up of having been taken out of school and on a field trip, though not an everyday occurrence, was still familiar to them. All these familiar aspects of formal education (the school CoP) were reassuring and resonant within the students’ agenda.

At the museum, they also met and had to deal with several unfamiliar artifacts and discourses: The original works of art, the tablet PC’s program, the exhibition hall (without chairs or desks), the sound and light show, their teacher’s new behavior and role, the unfamiliar expert at the museum whose assistance they had to enlist in order to do the work and, significantly, the situation of not being assessed or expected to produce answers that the museum educator already knew. Also significantly, both classes had been told by their teachers that their activity at the museum had no direct bearing on the work they were doing at school. This knowledge contributed to the feeling that this was a free period even though it took place during school hours. On the one hand, the museum was presented as a free-choice learning environment and on the other, the content and form of the work they were given to do resembled the content and form of the work they did in school every day. In this CoP, which was their learning environment for ninety minutes, the students’ identity as students and their agenda (motivation + strategies) were challenged by what might have seemed to them to be oppositely directed expectations and requirements. So despite the fact that the students’ visit to the museum could be termed an immersive visit, brokering the boundary between the students’ CoP and the museum’s CoP, e.g. by translating or coordinating their agendas and viewpoints, was made very difficult.
There is also the question of the students’ legitimacy in relation to the situation at the museum. Ideally, the RomanticArt program was created with a view to fostering a dialogue-based learning experience for students, providing them with information which they could use to formulate and argue for their own personal opinion about “their” painting. Giving them free rein and telling them that there were no given answers or arguments that they had to find and reproduce was to ensure that they felt their personal opinions were valid and legitimate in relation to the museum. As we have seen, many of the Brigby students sensed this and were appreciative. However, as we have also seen, there were several circumstances that stood in the way of the program being realized as it was originally intended, e.g. the shortness of time set aside for completing it. The few students in each class who were given the opportunity to voice their arguments did so in a debate orchestrated by the museum educator.¹ A debate which is orchestrated by a teacher as a way of testing students’ knowledge about a given subject is an activity not unknown to students. So when the museum educator, a stranger as well as an authority on the paintings, stepped into the role of teacher, chose two groups and took charge of the debate, the students were placed in a position where they possibly felt they were being tested. Moreover, they were placed in front of their teacher and the rest of the class. Most of them became reticent and shy, and although they had been told many times that their answers and arguments were valid no matter what, they seemed disinclined to disclose them for fear of being wrong or sounding silly. The two or three students who did present their arguments were articulate, energetic and unfazed by the situation; they appeared to be students who were used to doing well academically.²

It is time to investigate the teachers’ and the museum educator’s perspectives on the students’ learning outcomes, on what constitutes formal and informal learning environments and on the nature of the partnership collaboration. Harold’s viewpoints are used to contrast or complement these perspectives.

9.1.4 The teachers: Beth (Ix) and Heather (Iz)

In the following, an analysis of greatly condensed summaries³ of Beth’s and Heather’s responses regarding the student’s learning within the GLO categories functions to

¹ See Brigby, Appendix Partnership Introductions and Field Notes.
² Ibid.
³ Beth’s and Heather’s responses regarding the GLOs can be compared to what their students answered to questions of similar content, but to do so question-by-question would result in a great deal of repetition. This is why their responses are presented in a greatly condensed form in Figures 9f and 9g.
counterbalance to the findings regarding the students’ perspective. This analysis also gives us a glimpse of how Beth and Heather view the museum as a learning environment and allow us to compare their views.

Figs. 9f and 9g: Beth’s and Heather’s responses regarding their students’ learning (GLOs)

Regarding thwarted learning outcomes, both reported that some of their students were frustrated due to the difficulty of the program and the shortness of time allotted to doing the coursework. These two factors affected all the learning outcomes to a certain extent, which is also what the interview students related in their interviews.

Of the five GLOs, GLO1 (Knowledge and understanding) is the one within which Beth and Heather reported fewest learning outcomes. A positive outcome was that both classes had learned something about National Romanticism and the artist. Heather explained that her students gained a better understanding of the topic because she brought it up in her lessons after the visit. The interview students from her class were more eloquent about their learning outcomes within this category; they learned e.g. to use the educative materials in the RomanticArt program to understand the paintings, to understand concepts and terminology relevant to Golden Age art and that motivation and enjoyment stimulate learning.¹

Beth emphasized that the students did not learn about learning. Learning about learning was not an outcome that either teacher seemed to have considered in relation to this coursework. I asked Beth if the students became more aware of their learning from working in a different learning environment than they were used to and she replied, “I don’t think so. For that to happen, I think you have to make a point of working with it … you have to do meta-cognitive training with them … you know, “What have you learned? Why did it work that way?” — it could be done in many ways. But you would have to make it explicit for them because I don’t think they think about it themselves.” This view is in contrast to what her students Frederick, Rita and Mary said in their interview; a selection of their observations indicates substantial learning about learning:

Museum learning is active learning; seeing real objects helps one remember; one remembers better if learning is accompanied by experiences; not being assessed is relaxing

¹ See Table 9.7, Appendix All Tables (1Z re. GLO1)
and makes one feel freer and better able to concentrate; all the students are at the same level of knowledge so everyone has equal say.1

These divergences may be due to the fact that Beth and Heather, as teachers, were more preoccupied with and focused on subject-related (Danish and history) learning outcomes. As we learned from the students, both classes had finished their National Romanticism topics several weeks before the coursework at the museum, so subject-related learning outcomes might not have been very noticeable.

Both teachers noticed many learning outcomes that could be categorized under Skills. A whole range of skills were improved according to both Beth and Heather: Communication skills, social skills, intellectual skills, self-management skills, investigative skills, information management skills, knowing how to do something and being able to do new things. Furthermore, the students were physically active and explored the exhibition hall. The interview students from both classes mentioned fewer learning outcomes that fit this category. They were more preoccupied with how their group work functioned and how they communicated with their teacher and Tammy (communication skills and social skills). This does not seem surprising considering the fact that the learning environment was unfamiliar and they fell back on strategies in which they were well-versed.

Beth and Heather were very clear about the many motivational aspects of the learning environment at the museum. For example, Beth emphasized the individualized, personal learning opportunities the museum offered as very motivating for the students and Heather pointed out how motivating it was for them to meet an expert there (Tammy). Teachers and students alike agreed that the lack of performance assessment and the fact that the students were given free rein regarding how much effort they put into the coursework were motivating. Beth’s students felt it was de-motivating that the coursework at the museum was too late in relation to their schoolwork, something that Beth did not mention.

Heather spoke about how her students had enjoyed themselves and been pleasantly surprised as well as inspired by their experiences at the museum. Her examples can be inscribed in Falk’s and Dierking’s Contextual Model of Learning:2 The Physical Context

1 See Table 9.1, Appendix All Tables (1x re. GLO1) Earlier I pointed out that the responses to question B4 on the post-survey questionnaire indicated that only about 15 % of the students felt they had become more aware of how they learn from doing the coursework. However, during the interview, the students’ answers to my questions about learning revealed many mature and well-considered perspectives on that subject. This is a good example of how qualitative data show depth and quantitative data show breadth.

2 Fig. 7c, Appendix Chpt. 7
(e.g. the students felt comfortable at the museum; moving around helped them concentrate), the Socio-Cultural Context (e.g. the students were pleased there was an expert there to help them; they felt at home doing group work) and the Personal Context (e.g. the individual experience of the sound and light show; figuring out how to use the tablet PC).

Beth seemed not to have observed quite the same level of inspiration or enjoyment among her students. The difference between Beth’s and Heather’s observations of the students’ learning experiences within GLO 4 (Enjoyment, inspiration, creativity) resembles the difference between how the interview students in 1x and 1z, respectively, described their experiences. 1z students were more positive about a greater variety of experiences than 1x.

As far as the students’ behavior and activity are concerned, both teachers noticed that despite the fact that their students were initially a little subdued and reserved at the museum because it was an unfamiliar environment, they were more active, more responsible in their group work and took more responsibility for their own learning than at school. Beth felt that the students’ shyness was a barrier to having a successful debate. The comments of both sets of interview students were similar to their teachers’ but were naturally more detailed and comprehensive.

Regarding all of these learning outcomes, the students were talking about personal experiences in their interviews, contrary to the teachers, who were telling me about how they understood their observations of the students. This accounts for some of the differences in the number of experiences and the degree of detail that the teachers and the students remembered. Other differences were caused by the interview person’s perspective on the coursework, e.g. the teachers’ interest in formal learning outcomes such as gaining subject-related knowledge.

It is also important to investigate Tammy’s perspective on the students’ learning experience at the museum.

9.1.5 The museum educator: Tammy

Tammy did not know the students and therefore could not compare what she observed while they were at the museum with knowledge about them from other learning contexts. Nor did she communicate with the students or their teachers afterwards so she had no way of knowing how or if the museum experience had become established in their minds. To a certain extent, Tammy’s observations of the students’ learning within GLO 1 (Knowledge
and Understanding) and GLO 2 (Skills)\textsuperscript{1} resemble learning objectives, meaning the learning that the coursework was meant to generate. This becomes especially clear regarding GLO 1, where Tammy remembered more learning outcomes than either teacher did. However, it is important to remember that Tammy had collaborated with two upper secondary school teachers and their students as well as a focus group of students while the RomanticArt coursework was being developed.\textsuperscript{2} As part of that collaboration, the coursework had been thoroughly evaluated by both students and teachers. In other words, Tammy already had an idea about what the learning outcomes doing the RomanticArt coursework would or might generate, which may have influenced her comments in the interview.

The learning outcomes comprising the three other GLOs are more readily observable. Tammy’s comments regarding how the museum learning experience affected – or rather, did not affect – the students’ attitude and values\textsuperscript{3} are interesting because they echo what the white paper on museum education, user surveys and various reports and publications have documented about young people’s non-use of museums. This slightly remorseful tone is repeated under GLO4 (Enjoyment, inspiration, creativity): After explaining the many ways the students expressed enjoyment, surprise and curiosity, Tammy still concluded that they might not have enjoyed the visit because it was part of their schoolwork.\textsuperscript{4}

\textbf{9.1.6 Learning about the students – Beth, Heather and Tammy}

Beth, Heather and Tammy agreed that the coursework was too demanding for the students to do satisfactorily in the time allotted to it.\textsuperscript{5} The program on the tablet PC was complicated and required a long introduction, during which quite a few of the students stopped paying attention. Even after the introduction, they felt that the students had to spend too much time figuring out how to use tablet PC and the program. It seemed that the teachers and the museum educator were more concerned about the students being pressed for time than the students were. Many of the students, knowing that they were not

\textsuperscript{1} Fig. 9h, Appendix Chpt. 9
\textsuperscript{2} This is explained further in 9.2 below. It is also explained thoroughly in the Brigby, Appendix Partnership Introductions and Field Notes.
\textsuperscript{3} Fig. 9h, (GLO3), Appendix Chpt. 9
\textsuperscript{4} Tammy’s comment seems to indicate a slightly biased attitude about schoolwork. It would be interesting to find out if this is a general attitude among museum professionals regarding schoolwork. If it is, much work lies ahead to change this mindset.
\textsuperscript{5} See Learning about the students, Table 9.21 and SWOT – Weaknesses Tables 9.27 and 9.29, (Beth and Heather, respectively), Appendix All Tables
working to a set standard nor expected to (re)produce “correct” answers, relaxed and enjoyed the cozy atmosphere.

Besides their reservations, the teachers observed several new types of learning behavior and activities among their students. Both teachers were happy to notice that some normally quiet or inactive students grew animated at the museum. Heather pointed out that many students were more active and took greater responsibility for the group work than they normally did and guessed that it was probably because they were all working under equal conditions. She also noted, “Some of the boys who are … not academically minded but are good at virtual interactivity could actually take the lead [working out the technique of using the tablet PC]”1 and that in general, paintings appeal to students who might not be good at analyzing texts though she also said that students who are very good at analyzing texts can learn a lot from analyzing pictures.2 Beth’s angle was slightly different when she said that “especially weaker students would benefit from such a visit, which is more geared to practical skills.”3

A final interesting observation from both teachers had to do with how the relationship between themselves and their students changed while they were at the museum,4 where they both entrusted Tammy with the responsibility for the students’ learning experience. The students noticed their changed status and acted differently towards them by becoming more informal in their behavior and tone. Both teachers saw this as a positive side-effect of the museum visit.

Besides realizing that the students found the program too difficult, etc., Tammy also remarked that she learned that the students were good at giving feedback about their experiences. She did the rounds and spoke to all the groups while they were at the museum, helping them operate the tablet PC and use the learning resources, thus getting a good impression of what they thought was helpful or confusing about both.

9.1.7 Summing up Part 1: Student learning outcomes

It is helpful to condense the findings of the analysis up until now into the following points and see them in conjunction with the first research question.

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1 Heather, interview
2 See Learning about the students, Table 9.21, Appendix All Tables
3 Beth, interview. This comment seems to indicate a slightly biased attitude about museum learning. It would be interesting to find out if this is a general attitude among teachers regarding museums as a learning environment for students. If it is, much work lies ahead to change this mindset.
4 See Learning about the students, Table 9.21, and Adults’ learning, Brigby, Tables 9.22 and 9.24, (Beth and Heather, respectively), Appendix All Tables
Research Question #1: How is upper secondary students’ learning affected by their participation in coursework in a museum learning environment and which has been developed and is implemented by teachers and museum professionals in partnership?

1) The teachers were not completely satisfied with their students’ learning outcomes regarding subject-related knowledge. Heather intimated that the students did not learn enough because the learning objectives and methods of education are different at the museum than at school. Opposite this, the teachers and the museum educator observed that most of the students enjoyed themselves, were inquisitive, active and engaged, and “took to” the museum setting in the short time they were there, engaging with the paintings, the teaching materials and the museum educator and generally displaying behavior that indicated intrinsically motivated learning.

2) The interview students were not completely satisfied with their learning experience at the museum because they were unprepared for it and did not need to use it afterwards in school. Some of the students thought that the coursework at the museum was too hard and the tablet PC frustrating to use. Others were disappointed that they were not given the opportunity to tell about “their” painting at the museum. At the same time, as their teachers observed, the students enjoyed themselves, were inquisitive, active and engaged. They seemed to have learned quite a bit about learning, contrary to their teachers’ recollections about this.

3) According to the interview students, four main factors had a positive effect on their group work at the museum: their work was not assessed; there were no right or wrong answers; everyone in the group had equal say (no one was more “in the know” than others); they could get up and move around and look at other things when they felt like it.

4) The students expressed almost unanimously that participating in this coursework had not made them more inclined to visit the museum in their spare time. However, some of the student interviews revealed that they would be more inclined to visit the museum in their spare time if there were some activities or an event in which they could take part.
The interview students made it clear that they had noticed a difference in their teachers’ behavior and status at the museum and this brought about a change in how they communicated with their teachers. Furthermore, they noticed the museum educator’s liveliness, helpfulness and expertise – characteristics that were possibly highlighted by the teachers’ relative passivity.

Each of these points has to do directly or indirectly with the learning environment at the museum and created by the teachers and museum educator. The second half of Research Question #1 links the museum learning environment and the coursework the students do there to the partnership collaboration between the teacher(s) and the museum professional(s). The next part of the analysis focuses on this collaboration and sheds further light on the above five points and also feeds into Research Question #2.

9.2 Analysis Part 2 – Collaboration
This part of the analysis is based on condensations of the data which originated in the transcripts of the interviews with the two teachers, Beth and Heather and with the museum educator, Tammy. The findings that this analysis generates are then illuminated by means of i.a. Wenger’s theory.

The lack of collaboration between the teachers and Tammy defined the roles each of them played during the time spent at the museum, e.g. Beth and to a certain extent Heather were quite passive, leaving Tammy in charge of leading the students through the coursework. They could not help the students with the program or the tablet PC. There was no communication between the teachers and Tammy prior to the visit, so no matching of expectations took place. Prior to Heather’s visit, all contact with the museum was taken care of by Harold, her colleague who was interface liaison officer. Neither teacher was aware that teaching materials for pre- and post-visit activities were available on the RomanticArt website. In fact, one of the thoughts both teachers had about improving the collaboration and the students’ learning outcomes was that they should work together with the museum

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1 Beth and Heather said in their interviews that they had chosen to play a passive role at the museum. See Table 9.13, Appendix All Tables.
2 See Figs. 9i – Fig. 9o: Re. Collaboration, SWOT analyses, adults’ learning, etc., in Appendix, Chpt. 9
3 The tables used as a basis for the condensations (Figs. 9i to 9o in Appendix Chpt. 9) in this part of the analysis are Table 9.13 and Tables 9.27-9.30 in Appendix All Tables. Harold’s viewpoints (in condensed form) are included when relevant, see Fig. 9f, Appendix Chpt. 9.
4 Heather communicated more with Tammy than Beth did and she was more actively involved in assisting in the organization of the coursework at the museum, activities that could be considered as a first step of collaboration.
to produce teaching materials before and after the coursework at the museum. The coursework was not embedded in the students’ lessons at school. Reinforcing the students’ learning in subsequent lessons was difficult because neither teacher did the RomanticArt coursework; however, we learned that Heather did refer a little bit to the paintings in a subsequent lesson and that her students (1z) remembered them clearly.

Tammy’s role at the museum was locked in place. She was responsible for delivering the coursework in much the same way as doing a guided tour. In her SWOT analysis, she said that one of the things that might threaten the partnership was if teachers were not as open and geared toward collaboration as Harold and his colleague Dorothy had been. Indirectly, this gives us an idea of how she viewed the activities she carried out with Beth’s and Heather’s classes.

It is interesting to compare what Tammy and Harold remembered about their collaboration the year before and then consider the question, “What happened?” to change the partnership to such a degree.

Tammy’s and Harold’s descriptions of the first year of collaboration are similar, starting with brainstorming and planning meetings and concluding with the formalization of the collaboration when Harold became liaison officer at the school, charged with maintaining and developing i.a. the school’s interface partnership(s). What struck me was that Tammy and Harold both expressed personal feelings about the collaboration: Tammy was “grateful for” and “pleased” with it and Harold was “honored that the museum would collaborate with the school.” This indicated that both participants were invested in their collaboration and experienced it as genuine and important. Tammy hoped that the partners would become even more dedicated to each other and both felt that the collaboration had had a transformative effect on their own community of practice. They themselves seemed to have formed a practice across the boundary between their communities by forming a close relationship and negotiating a detailed understanding of their joint enterprise, reified in the coursework they produced. It may, in fact, be in the reifications of their joint enterprise that one answer to the question about what happened to change the partnership can be found. The coursework Tammy, Harold (and Dorothy) produced lived up to their ambition to design a relevant solution for other teachers to incorporate as part of their

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1 Harold and his colleague Dorothy collaborated with Tammy to develop, implement and evaluate the coursework which later became RomanticArt.
2 Fig. 9k and 9l, Appendix Chpt. 9
3 Ibid.
Danish and/or history curriculum. Pre-visit and post-visit activities and materials for students were prepared and made available. This coursework was taken a step farther by the museum, still with contributions from Harold and feedback from students, eventually becoming the RomanticArt program, now a package-deal, an off-the-shelf, self-contained program. There was no longer any need for collaboration between the museum educator and teachers as far as the RomanticArt program was concerned.¹

When one collaborates with a different community of practice, one not only learns about its discourses, enterprises, artifacts, etc., one also learns about one’s own practice. In the interviews with Harold and Tammy, it was clear that they had met a person with a different perspective and had an experience that opened their “eyes to a new way of looking at the world,”² becoming more aware of their own perspectives in the process.³ They learned about developing teaching material with a professional person from a different learning environment and they discussed learning outcomes and the pedagogical and didactic framing of the coursework in order to ensure its value as teaching material for upper secondary school. Both felt that the collaboration had changed the way the museum and school could be of use to each other. It was a win-win situation, as Tammy put it in her description of the first year of the partnership’s collaboration.⁴

Beth and Heather also felt that they had learned about their own practice⁵ from visiting the museum with their students, e.g. establishing a new practice in Danish lessons, getting new ideas about how to plan and organize lessons, how not being assessed affects the students’ behavior, etc. They also realized that the students’ learning outcomes at the museum would have been enhanced if their prior knowledge about the topic of the museum coursework had been more active and if they had been given more time to do the RomanticArt program.

Tammy’s learning during her activities with Beth and Heather and their classes had to do with how to introduce the RomanticArt program better.⁶ This seems a small learning experience compared to what she said about her learning when she collaborated with Harold and his colleague Dorothy, where she gained important insight into concepts, tools

¹ Ibid.
³ See Fig. 9o, regarding Tammy’s own learning and Fig. 9l regarding Harold’s responses regarding collaboration and SWOT
⁴ Fig. 9k, Appendix Chpt. 9
⁵ Fig. 9m and Fig. 9n, Appendix Chpt. 9
⁶ Fig. 9o, Appendix Chpt. 9
and discourses of the teachers’ community of practice, e.g. pedagogical and didactic considerations, lesson design and curriculum requirements.

The marked difference in the levels of Beth’s and Heather’s learning and Tammy’s learning could have been caused by the fact that Beth and Heather, like the students, were visiting a new community of practice, and despite their decision not to participate actively in it, still observed some of its practices and its artifacts. Their visit resembled what Wenger calls “immersion,” which, as explained earlier, is when members of one community visit the other community, thereby deepening their knowledge of it, while the host community learns very little about the visitors’ home practice. The teachers noticed things that they could incorporate in their own general practice, but next to nothing about the coursework and very little about their partner. Tammy did not learn anything new about her interface partners because the set-up of the coursework, as we have seen, more or less precluded further collaboration between the school and museum.

In Wengerian terms, engagement in practice is a learning process, which takes place along the three dimensions of practice. Ideally, participants’ engagement is evolved over time as they build and negotiate their joint enterprise and develop their own shared repertoire. Such learning did not occur in this case because the reification of the joint enterprise – the RomanticArt coursework so carefully tailored to meet curriculum requirements, stimulate various learning behaviors and be a memorable experience – was non-negotiable. So all three of the dimensions were more or less disabled and the teachers’ and the museum educator’s did not become engaged in learning about each other’s practice or develop any kind of shared repertoire. This may be a second explanation for why the partnership was so different in its second year.

The teachers’ decision to downplay their authority and remain rather passive while they were guests at the museum might have been caused by the fact that they had no sense of ownership of the coursework and possibly did not feel accountable for its success. If this is true, Falk’s and Moussouri’s concept agenda (= motivation + strategy) is relevant to apply as a way of explaining that decision. It seems likely that Heather’s and Beth’s choice to use the RomanticArt program for the students was occasioned by their colleague Harold’s encouragement to use it as an inspirational kick-off to the students’ Danish-history paper and his helpfulness in organizing the visit as well as by their principal’s interest in and support of the school’s partnership with the museum. In other words, it

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1 Fig. 8b, Appendix Chpt. 8
seems that they were mainly motivated by external factors\(^1\) and were basically not expected or required to do very much to prepare the visit. Their relative non-involvement led to a disengaged strategy at the museum and a conscious decision to let Tammy be in charge. So contrary to the first year of collaboration, the second year saw no mutual engagement in negotiating their joint enterprise, and the shared repertoire that had been established the previous year was of little significance for Heather, Beth or Tammy.

### 9.2.1 Summing up – Part 2: Collaboration

How do the findings of the analysis in Part 2 answer Research Question #2: How are the teachers’ and museums professionals’ understanding of their own and their partner’s communities of practice affected by their collaboration to develop and carry out coursework for students in a museum learning environment?

1) Although the teachers did not collaborate with Tammy before or even during their visit at the museum, they both felt they learned a number of things relevant to their own practice by observing their students’ behavior and activities when doing the coursework as well as how Tammy managed the situation.

2) The teachers chose a non-involvement strategy at the museum, possibly because they felt no ownership of the coursework and were not involved in organizing the visit. Needless to say, their collaborative skills were not brought into play.

3) The teachers’ non-involvement strategy coupled with the fact that the coursework had been booked as – and functioned as – a package-deal meant that Tammy learned very little about them or their practice. In Wengerian terms, there were no meanings left to negotiate regarding the coursework or how it was to be implemented. In other words, there was little use for Tammy’s collaborative skills.

We saw that using Wenger’s model of the three dimensions of practice\(^2\) illustrated how the meeting of these two communities of practice for the purpose of carrying out a pre-arranged activity did not entail or result in collaboration. The dimensions – joint enterprise, mutual engagement and shared repertoire – were not developed; in fact, they were disabled by the way the activity was organized and the nature of the coursework.

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\(^1\) See Table 9.16 in Appendix All Tables, which illustrates that in their interviews with me, Harold and Tammy remembered enjoyment and high motivation in connection to their collaboration but Beth and Heather did not.

\(^2\) Fig. 8b, Appendix Chpt. 8
Hejlskov Larsen’s model “Collaboration – three alternatives,” offers a different angle on collaboration. According to this model, the activities of the second generation of the Brigby partnership more or less fit the type of collaboration called “Facilitation”. Both the school and the museum clearly adhered to its own institutional culture and understood themselves as being separate and different from each other. The first characteristic of this type of collaboration, helping each other, is less obvious, although Heather did make an effort to help Tammy. Michelle Phillips’ concept of “cooperatives” is even more relevant to apply; according to Phillips, there is often a hierarchical relationship between the partners of a cooperative, meaning that one of the organizations provides a service to the other. In the Brigby case, we have seen that the RomanticArt coursework was booked for two ninety-minute visits without any prior or following communication between the teachers and the museum educator.

9.3 Summing up – Brigby Gymnasium & HF and Brigby Art Museum

In the analysis of the Brigby case, the GLOs were used as a quantitative and qualitative measure of the students’ learning. In the qualitative approach, the GLOs show us that the interview students’ experience at the museum resulted in a variety of learning outcomes: Subject-related learning, sensorial discovery in relation to art, reflections about how group work functions, engagement in new forms of communication with their teachers, understanding the significance of not being assessed and of taking responsibility for one’s own learning, reflections about how motivation is created and how it supports learning, becoming acquainted with and learning to navigate within an unfamiliar learning environment, relating and contrasting learning experiences at the museum with learning at school, etc. The break in the everyday routine of school was a motivating factor. The analysis also revealed negative learning outcomes caused by frustration, confusion and disappointment, experiences that were de-motivating and fostered counterproductive learning and behavior. Furthermore, the ambiguity of the learning environment – on the one hand framed as a formal school field trip meant as an inspirational backdrop to the students’ Danish-history papers, and on the other hand couched in an informal and to a certain extent even a free-choice setting – made it difficult for the students to employ

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1 Fig. 8f, Appendix Chpt. 8
2 See Section 8.3, Chpt. 8
3 These outcomes align themselves with the general education learning outcomes of upper secondary education programs, the knowledge, skills and competence of the Danish Qualifications Framework and even the text describing each of the EU’s eight key competences. See 7.3.1, 7.3.2 and 7.3.3 above
effectual learning strategies. The coursework itself was ambiguous, requiring the students to do work very similar to what they were familiar with in school but framed as having no right or wrong answers and furthermore having as its point of departure their personal experience of the artwork. A third consideration is that they were not prepared for this visit and the learning they did take away with them was only minimally reinforced later in school. The lack of preparation meant that their agenda was inadequately furnished to cope with the task, which put some of the students in a situation where they experienced too high a level of toil and moil in relation to doing the work to their satisfaction. So to a certain extent, the ambiguity of the learning environment created by the coursework blunted the students’ agenda. At the same time, the students’ responses make it clear that many of them simply “got on with it,” getting the best out of the situation.

The analytical findings generated by using the GLOs as a quantitative measure of the two classes’ learning more or less support the qualitatively generated findings from the student interviews. More importantly, they reveal differences in how the students from 1x recollected their learning experiences compared to 1z students. These findings reflect what we learned about – from the teachers and the museum educator – the small but important differences in how the coursework was presented and reviewed by the teachers and how it was managed at the museum.

Using the quantitatively generated findings to support or contrast the interview findings strengthens the final analysis by virtue of having been harvested via online surveys or “at arm’s length” i.e. the respondents were not influenced by my presence. True to the interpretative approach of my research design, the qualitatively generated data have been allowed to dominate the analysis of the Brigby case.

As we have seen, using Wenger’s concepts to analyze the lack of collaboration illuminates the effects this had on the roles the teachers and museum educator played during the visit at the museum and the effects these roles had on their interaction and perceptions of this interaction. Because of the way the visit and the coursework were organized, they were not required to become involved. This, then, formed part of their own agenda as visitors at the museum, which their behavior and actions reflected. The students noticed and appraised the teachers’ and museum educator’s behavior; they became chatty with their teachers and were shy and extra polite in relation to Tammy, the unfamiliar expert from the museum. This situation, coupled with the ambiguity of the coursework and its unclear applicability in relation to their schoolwork created an opaque
learning environment which seemed to fall short of realizing the full potential of the RomanticArt program specifically and the museum learning experience in general.

Relating the two parts of the analysis to each other gives us a picture of how the collaboration, or rather lack of same, affected the students’ learning experience at the museum. How can these findings be used proactively to develop partnerships’ collaboration as well as their combined learning potential? The teachers themselves suggested that such a visit must be better prepared in order for the students to be able to apply their subject-related knowledge confidently and actively while they are doing the coursework or asking (or answering) questions about the topic. They might have invited Tammy to come to the school and tell the students about National Romanticism; a beneficial side-effect of such a visit would be that the students would become acquainted with her before the visit. If the teachers had spoken with Tammy before the visit about how best to prepare the students, they would have learned about the pre- and post-activity teaching material that was available on the RomanticArt website. If they had taken it a step further and visited Tammy at the museum and talked with her about the educative, pedagogical and didactic motivations behind the program and perhaps tried doing it themselves, they would have been able to assist the students actively at the museum, thereby lightening Tammy’s workload as well as showing the students an example of a collaborative undertaking. Furthermore, investing time and effort in familiarizing themselves with the program might have had the favorable side-effect of making them feel more responsible for its success.

It must be noted, however, that the teachers were generally positive about the outcome of the visit and the coursework. They themselves were inspired by the way the coursework was designed (e.g. the sound and light show) and got ideas for their own teaching. Nor do their responses reveal serious doubts about the quality or outcomes of the students’ learning. This indicates that the entire experience lived up to their experiences and expectations as far as a field trip like this was concerned.

The teachers spoke very little about Tammy and Tammy hardly mentioned these two teachers in her interview. Her responses indicate that she was very happy for the previous

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1 We do not know if Harold told the Heather and Beth about this material, but it seems unlikely considering their interview responses. However, it is also rather puzzling that he did not tell them, given the fact that he and their colleague Dorothy had worked on it with Tammy for so long the previous year. Furthermore, Heather and Beth were the first teachers from Brigby Gymnasium to try out the RomanticArt program after it had been developed.
year’s successful collaboration with Harold, Dorothy and their students and when she realized that the Heather’s and Beth’s visits did not involve any collaboration, she fell back on her usual practice. As an experienced museum educator, being in charge of carrying out an educational program that had been booked by a teacher for his or her class was a routine part of her job. Had she not had the genuine collaborative experience the year before with Heather’s and Beth’s colleagues and students from their school, Tammy might not have given this experience a second thought. A potential threat to the partnership’s future collaboration, which the teachers and the museum educator mentioned, was if it became too time-consuming and cumbersome. If the above recommendations were implemented as part of the formalized partnership practice, it is possible that the teachers and the museum educator would see this practice as requiring too much of them.

The question remains: If Heather, Beth and Tammy felt that the two classes got what could be expected out of the coursework, as it was organized in this case, and were relatively satisfied with that, and if the students took the experience as an interesting break in their daily school routine, does it matter that their learning experience was muddied by the lack of collaboration and clarity in the learning environment?

The next case, Hammersby, is very different to Brigby as far as the form and content of the students’ learning experiences and outcomes, the coursework itself and the collaboration between the teachers and the museum professionals are concerned. In the Hammersby interview data, it is hard to find a negative recollection about any of this, a situation which the quantitative data corroborate. Compared to the Brigby analysis, the focus of the analysis of the Hammersby case is much narrower, zeroing in on students’ learning outcomes (GLOs) and teachers’ and museum professionals’ collaboration to find and analyze any connections between them. We shall also see if the above recommended actions could result in stronger learning outcomes, as the Hammersby partners and students enacted most of them.

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1 Please remember that only students from 2t (and not 1s) answered the online surveys.
Chapter 10: Hammersby Gymnasium & HF – Hammersby Museum

10.1 Analysis Part 1 – Student learning outcomes

The two sets of coursework of the Hammersby case were similar in a number of ways, e.g. both involved two teachers and two museum professionals who collaborated in planning and carrying them out, both were organized so the students met a number of other experts (e.g. archaeologists), both included a range of outdoor activities and in both the students were required to make products that would be displayed to the public by the museum. So even before the two sets of coursework have been analyzed, it seems clear that the teachers and museum professionals and students involved in them must have had significantly different experiences than the teachers and the museum educator and students of the Brigby case.

Although Rethinking Ashton\(^1\) was carried out nine months after Ring Fortresses\(^2\), it is analyzed first and more fully than Ring Fortresses. This is because the process of data collection relating to all phases of the coursework follows the pattern described in Chapter Four and is thus more directly comparable to the Brigby, Cranwell and Westby cases\(^3\). In the Ring Fortresses project, I must rely on the qualitative data, i.e. what the students and teachers and museum professionals from the partnership told me during the interviews.

Following the analyses of both classes’ learning experiences, the findings will be compared to the findings of the Brigby case.

10.1.1 Students’ interview 2t: Robert, Cissy, Mimi and Steve

On December 10, eleven days after their Rethinking Ashton presentations at school, I interviewed four students from 2t: Robert, Cissy, Steve and Mimi. Their recollections of the coursework were overwhelmingly positive. All four students were very articulate about their learning outcomes and about why they felt the coursework was such a success. Furthermore, the four students’ responses were quite similar.\(^4\) All four seemed to have been very motivated to do the work. After presenting the students’ recollections of their

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\(^1\) In the Rethinking Ashton coursework, the students in 2t worked with their hometown, Ashton, studying its past development in order to design future scenarios for the town’s parks, commercial areas, etc. See Hammersby, Appendix Partnership Introductions and Field Notes.

\(^2\) In the Ring Fortresses coursework, the students in 1s worked with several Viking Age ring fortresses to discover who built them, how they were built and how knowledge about these things is produced. See Hammersby, Appendix Partnership Introductions and Field Notes.

\(^3\) In the Shoresby case, the students did not answer the online surveys.

\(^4\) Tables 10.7-10.11 in Appendix All Tables
learning experience within all five GLOs, they are analyzed according to the key factors that influence learning in Falk’s and Dierking’s Contextual Model of Learning.\footnote{The three contexts of learning and their associated key factors are cited in Fig. 7c and 7d, Appendix Chpt. 7}

As far as GLO 1 (Knowledge and understanding) is concerned, all four students agreed that they had learned how to be critical of historical sources, which is one of the learning objectives of a multi-subject course.\footnote{See section 7.3.3 above} Steve mentioned that they also learned how to be critical of the experts they met during the week of the coursework, e.g. the gentleman from the Industrial Development Board, who gave a talk on Day 1 of the coursework. Steve and Mimi pointed out that they learned about subject-related methods, another important learning objective of a multi-subject course. They learned about the town, e.g. about certain buildings and about how having a railway station in earlier times had influenced the town’s development. The students’ responses indicated that they had become aware of how close they were to history at the museum compared to when they read about history in books. According to Cissy, having the sources right there helped her remember them better. She also understood that what they learned from the people they interviewed could be used to question the content of tourist brochures. Robert was very impressed by how knowledgeable the museum experts were. While they were at the museum, Cissy felt she learned something about how knowledge is created. All four students’ responses suggested that doing the coursework had given them some insight into how they learned, e.g. Cissy’s remark about how being allowed to take responsibility for their projects gave them a sense of ownership of their work, and Steve’s similar remark about how the coursework made it possible for the students to decide for themselves how to organize their work and findings.

The post-survey data on the graphs\footnote{See Graphs 2tA1-2tA7, Appendix Chpt. 10. As in the previous chapter, only Survey answers regarding content that is comparable with the interview students’ responses are included.} mirror the interview students’ positive recollections of their learning experience. Percentages ranging from 77% to 95% of the twenty-two students who answered the online questionnaire ticked “Definitely” or “Pretty Sure” for all seven GLO 1 questions, indicating that a great majority of the students felt that they had gained knowledge and understanding according to what the questions asked.
The two teachers’ and the two museum professionals’ recollections of the students’ learning within GLO 1 (Knowledge and understanding)\(^1\) were very similar to those of the students and thus also very similar to each other’s. This is a recurring phenomenon in relation to all the GLOs and is discussed later.

Regarding GLO 2 (Skills), the students’ communication skills were sharpened by their efforts to frame their presentations in language that was readily understandable by the general public and, in written form, was suitable to be incorporated in the archives and be uploaded onto the museum’s website. Cissy remarked that the class had learned about and gained experience from interviewing people, another type of communication skill. Cissy herself demonstrated empathetic thinking when she remarked that hands-on activities like making maps were helpful for students who found a mainly theoretical approach challenging. All four students felt that they had learned about how to be critical of historical sources, not only in their lessons in school but also from working with concrete sources at the archives, e.g. photographs and anniversary publications. Regarding information management skills, they had learned about the archives’ database and about how to search for information for their topics. They had also become acquainted with how the Geographic Information System (GIS) is used by an archaeologist and how to use Google Earth.

The corresponding post-survey graphs\(^2\) confirm the interview students’ remembered learning experiences, though not quite as consistently as the graphs relating to GLO1. Of the eight GLO 2 questions on the survey, five of the graphs show 68% or more of the students ticked “Definitely” or “Pretty Sure,” indicating that they recalled a learning experience in relation to these questions. Just over half of the students felt that they had grown more aware of how they learn (Hammersby2tB4) from working with museum objects. The disparity between the interview students clearly demonstrating that they had gained insight into how they learn and the less than convinced answers on the questionnaire are probably due to the fact that the interview students were asked a number of probing questions about this, giving them the opportunity to reflect, remember, respond \textit{and} hear the other three students’ responses – a reflective process that is not possible when students do an online survey individually. The numbers on Hammersby2tB5 indicate a marked drop in the number of students who had expected to become better at asking

\(^1\) Table 10.16, Appendix All Tables
\(^2\) See Graphs Hammersby2tB1-2tB8, Appendix Chpt. 10
subject-related questions by putting them to museum employees. The interview students’ responses tell us that they experienced the two museum professionals, Brad and Mickey, as being open, approachable, helpful and very knowledgeable, making it easy for them to formulate subject-related questions. Furthermore, Vera, the history teacher, was with them while they were at the archives, so the students had two experts they could ask subject-related questions.

As we have seen, many of the students felt that they had become better at working in groups, but only half of them felt that their group work had functioned differently in the museum than at school (Hammersby2tB7 and B8). The interview students did not mention their group work, suggesting that there was nothing unusual about it.

Concerning GLO 3 (Attitudes and Values), all four interview students pointed out that it was very motivating for them to be put in charge of collecting sources and information for their presentations and be given free rein to interpret their material. This gave them a sense of ownership of their material. It was a positive experience to produce something that was meant for an authentic audience. Mimi felt the coursework was especially interesting because it was about her home town and its future. Robert, Cissy and Steve all felt that they had learned about the museum and the people in it; Robert and Cissy were especially impressed with how knowledgeable the museum professionals were, though, in Cissy’s opinion, they were not familiar with pedagogy and learning styles. Robert felt that it was the museum that tied the coursework together and that he might visit the museum again if he needed information about the town. Cissy mentioned that she had learned that the museum experts were available if she needed information. Both she and Robert thought that it would be more interesting to visit the museum again if their exhibits had themes that were related to the present. Steve said he had learned about the function of the archives and the museum and that both of them look after history and keep it safe.

The GLO 3 graphs do not shed significant new information regarding how the students remembered their learning experiences within the category Attitudes and Values. It is interesting to note, however, that fifteen of the students ticked “Definitely” or “Pretty Sure” on the post-survey question about experiencing new things about their classmates, while only six students felt Pretty sure in the pre-survey (Graph Hammersby2tC1) and

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1 Vera was not the class’ regular history teacher; she was standing in for him for this multi-subject course.

2 See Graph Hammersby2tC1, Appendix Chpt. 10
thirteen of the students also discovered new things about their teachers, indicating that this coursework brought out hitherto unnoticed characteristics in the students and the teachers and / or their powers of observation were sharpened by interacting with each other in a new environment outside of school.

Moving on to GLO 4 (Enjoyment, inspiration, creativity), all four students remembered the coursework as being very enjoyable and that it was fun to work this way and more interesting than a traditional multi-subject course. They were given free rein to develop their visions for the future of their town and given credit for being creative. It was exciting that they were expected to think for themselves and not just reproduce what others had written in books or come up with answers that the teachers already knew. Robert was inspired by meeting the experts at the museum and both he and Steve mentioned how it was interesting to investigate certain aspects of the community that were relevant to their topics, e.g. the development of the town’s business community and the number of commuters going in and out of town. Cissy noted that they got practice in using subject-related methods in their work. Steve mentioned that it was good to be given the opportunity to discover and work with relevant, useful concrete sources instead of only reading about their topics in books.

Two of the GLO 4 graphs indicate a somewhat lower degree of enthusiasm than the interview students’ responses reveal. Twelve of the twenty-two students felt that being at the museum was inspiring when they did the coursework, and eleven of the students ticked “Not very likely” or “Not at all” when asked on the post-survey if they discovered that being at the museum made it fun to do the coursework. There is nothing in the interview students’ or teachers’ and museum professionals’ responses which explains the disparity between their responses and the quantitative data regarding these things.

As far as GLO 5 (Activity, behavior and progression) is concerned, Cissy noticed that she and her classmates worked extra hard on their presentations because they might be put on the museum’s website. Mimi remarked that she had learned a lot about how to use subject-related methods and that this knowledge could be applied in other multi-subject courses.

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1 See Graph Hammersby2tC5, Appendix Chpt. 10
2 See Graphs Hammersby2tD1 and D2, Appendix Chpt. 10
3 Thirteen of the students in 2t shared Cissy’s viewpoint about how being at the museum made them act differently than they would at school, see Graph Hammersby2tE1, Appendix Chpt. 10
However, it was the four students’ responses to my questions about how likely they would be to use the museum in the future that were truly interesting. All four interview students indicated that they would be likely to visit the museum again if they needed information, and Robert and Cissy said that they would visit the museum in their spare time if there was an interesting exhibit on, especially if its theme was related to a contemporary issue, or if there was an art exhibit.\(^1\) Steve and Mimi said they would probably not visit the museum in their spare time but that they would use it for schoolwork. These considerations are more or less accordant with what the numbers on the graphs show:\(^2\) Eleven of the twenty-two students (compared to seven in the pre-survey) ticked “Pretty sure” on the post-survey question about using the museum for schoolwork, and eight (compared to six in the pre-survey) ticked “Pretty sure” about visiting the museum in their spare time. Both interview student responses and post-survey responses are different to the two Brigby classes’ responses\(^3\) to these questions, which is discussed in section 10.1.5 below.

It is interesting to notice that 2t students’ interview and online responses indicate positive learning outcomes within all five GLOs despite the fact that they were seemingly not particularly well-prepared for their coursework, judging from the numbers on Graph Prep,\(^4\) where only seven of them remembered doing preparatory subject-related work in class.\(^5\) However, on the morning of Day 1 of the coursework week, Selma and Vera, the two teachers, spent sixty minutes presenting the coursework’s purpose and topics to the class and explaining the subject-related methods they would be expected to utilize in their work. In other words, the students were prepared for the coursework but none of the options on the online questionnaire exactly matched the preparatory activity they experienced. Furthermore, the numbers on Graph Eval\(^6\) indicate that several students recalled many different evaluation activities, e.g. oral and written evaluations of the coursework and their teacher mentioning the coursework in class. These are reinforcing

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\(^1\) Although Hammersby museum is a cultural history museum, art exhibits are regularly organized in one of the exhibition rooms.

\(^2\) See Graphs Hammersby2tE3 and E4

\(^3\) The Brigby interview students said they might visit the Brigby Art Museum in their spare time if there was a special event going on there in which they could participate. The girls mentioned role-plays as a possible event. See 9.1.2 above.

\(^4\) See Graph Prep, Appendix Common Graphs. 2t is the third column of numbers from the left.

\(^5\) It must be kept in mind that Vera was not the class’ regular history teacher, so in that subject, no preparatory work had taken place, which may partly account for the low numbers on this graph.

\(^6\) See Graph Eval, Appendix Common Graphs. 2t is the third column of numbers from the left.
activities that help to consolidate the students’ learning experience and their understanding of it by encouraging them to reflect on it. It probably also made it easier for them to recall their learning experiences when they were ticking post-survey answers or when telling me about them in the interview.

Using Falk’s and Dierking’s eight key factors that influence learning to analyze 2t’s learning context gives us an idea of why the students’ recollections of the coursework were so positive. The fact that the topics of the coursework had to do with the town where the school was located and where many of the students lived made the coursework personal and interesting to them and made it possible for them to draw upon their own knowledge throughout the week’s activities, e.g. formulating questions to ask informants, deciding on search words to use to find information on the archives’ database, or when listening to and understanding the speakers on Day 1 of the coursework week. Because of their personal relationship to the town, developing scenarios for its future was also meaningful to them and motivated them to do what was required of them in this multi-subject course. The students’ responses revealed that the students felt that the coursework made it possible for them to exercise choice and control over how they organized their investigations and especially how they envisioned the future of the town within their group’s topic. This gave them a sense of ownership of their work and their product, which is an intrinsically motivating feeling. Their sense of self-determination (choice and control) was mostly due to how the coursework was set up. The success of their activities at the archives was quite dependent on Mickey’s and Vera’s guidance and they were not at the archives of their own free will. However, the interview students’ responses indicated that using the archives at the museum was exciting, not least because they were working with concrete material and felt close to history.

The Sociocultural Context of 2t’s experience at the museum was that the students were organized in groups, each of which was given a topic associated with the town, e.g. Business and industry or Traffic. Although the interview students spoke little of how their group work actually functioned, it was clear from my observations while they were at the museum that they asked more questions and suggested more solutions, did more trial and error experimentation, were more attentive to each other and were generally more active while they were in their groups compared to when they were on the guided tour at the

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1 Ryan (2000), p. 58
2 See Hammersby, Appendix Partnership Introductions and Field Notes, p. 13
museum or listening to the archaeologist’s talk about GIS. Not that this is surprising by any means; it illustrates the Falk and Dierking concept of “within-group sociocultural mediation.”\(^1\) The students had a common goal, were very motivated and used each other to reach that goal e.g. by figuring out what to look for in the archives’ database and discussing how best to utilize it in their presentations with due regard to their target audience. Many students in 2t felt that they had discovered new things about their classmates during this coursework, which is not surprising, considering the fact that the museum setting was new to them and the multi-subject course was different from the other multi-subject courses in their experience. Navigating within this framework could be said to make up the “toil and moil” of the coursework for these students, and caused them to experiment, reflect and make choices together.

The students’ responses revealed that they had interacted with many adults: Their teachers, Brad, Mickey, the archaeologist, the speakers on Day 1 of the coursework and the people they interviewed, all of whom contributed to their learning. The interview students mentioned several times how impressed they were with the expertise and helpfulness of the people at the museum. In Falk’s and Dierking’s terminology, this key factor of learning is called “Facilitated learning by others.”\(^2\)

Concerning the third context of Falk’s and Dierking’s model, The Physical Context, this coursework was planned and carried out in such a way that on the first day, the students were shown around the museum, the storage rooms and the archives before actually settling down to work. The archives at the museum are not extensive, and the students quickly made themselves at home. The design of the archives’ database, on the other hand, though not a physical space, was unfamiliar territory which the students needed help to navigate. This help was forthcoming, so the “toil and moil” of searching the database did not become overwhelming. The physical context of the coursework was also extended to the town itself, which was the object of their investigations. At the beginning of their coursework, the students went on a town tour with the former mayor\(^3\) and thus gained an insight into the town – while they were walking around in it – from the perspective of a person who had been responsible for running its business and normal administration. Part of their group work also took place at different localities in the town, e.g. when they were interviewing people or counting cars or taking photographs.

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\(^1\) Falk (2004), p. 141

\(^2\) Op. cit., p. 142

\(^3\) The former mayor was also one of the speakers at the introductory lectures
The eighth key factor that influences learning, “Reinforcing events and experiences outside the museum,” is a factor bound to time. In the days following the students’ presentations, Selma evaluated the coursework with the students orally and in written form and referred to it during lessons, all of which were reinforcing activities. The data of this research do not tell us if Selma continued to refer to the students’ learning experiences generated by this multi-subject course; however, considering the number of geography lessons spent on this coursework, it is very likely that it became part of the examination syllabus for that subject, meaning that it would be referenced in lessons and studied before exams.

As mentioned earlier, the two teachers’ and the two museum professionals’ recollections of the students’ learning within each GLO were very similar to those of the students and thus also very similar to each other’s. The accordance in their views can be ascribed to the following circumstances: 1) they prepared the coursework together in great detail and were in agreement regarding what learning outcomes they hoped the coursework would generate; 2) they agreed on what role each adult was to play during the coursework and therefore knew what each adult would contribute to it; 3) Brad and especially Mickey communicated closely with the students during the coursework and Brad was present during some of the presentations, meaning that the students and museum professionals “got to know each other”, e.g. their thoughts regarding the topics and circumstances of the coursework. These three circumstances reveal a great deal about how the teachers and museum professionals organized their collaboration. An analysis and discussion of this collaboration follows in the 10.2 Analysis Part 2 below.

10.1.2 Students’ interviews: Haley, Felix and Morgan

I interviewed Morgan, Felix and Haley at their school on May 21, 2012, approximately seven weeks after they had completed the coursework Ring Fortresses. Like the 2t students, these three 1st-year students were extremely positive in their recollections of their learning experiences during the coursework. Furthermore, they could describe the coursework activities in detail, even after seven weeks, which suggests that these activities impacted deeply on them. In fact, within the first three GLOs, they recollected a greater variety of learning experiences, and in greater detail, than the four 2t students, Cissy,

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1 See Graph Eval, Appendix Common Graphs
2 See Tables 10.16 – 10.10, Appendix All Tables
3 See Tables 10.1 – 10.2, Appendix All Tables
Robert, Steve and Mimi. Their recollections were impressive especially within GLO 1 (Knowledge and understanding).

In many respects, the three 1s interview students’ responses within all five GLOs\(^1\) were very similar to 2t’s. They, too, were pleased that they had learned how to be critical of historical sources and that historical knowledge is open to interpretation. They also learned to see a topic or an object from more than one perspective and they appreciated being put in a situation where they had to think for themselves and utilize their original thoughts to create their products. Both classes got a new perspective on archaeology and the museum, and the students in both classes discovered new things about each other, i.e. that museum learning was beneficial for students who found straight book-learning arduous. Like half of the students in 2t, Haley, Felix and Morgan also said that they would visit the museum again if it was relevant for their schoolwork. In both classes, it was clear that the students had gained subject-related knowledge, learned about the subjects’ methods and reflected on learning itself.

There were also slight differences between the Ring Fortresses coursework and Rethinking Ashton. The 1s students and the teachers and museum professionals responsible for creating this learning environment mentioned these activities in response to questions about one or another type of learning activity:

1) The students were expected to engage physically with the museum setting as part of the coursework: Jumping moats, shooting bows and arrows, pacing off the length and breadth of the fortress sites, excavating with archaeologists’ tools, etc.

2) The students produced a physical product (The Wheel of Fortune), which the museum was given at the end of the coursework

3) Museum experts accompanied or met with the students (and their teachers) when they were on their field trip to assist and guide them in their tasks

4) The students were given the resources to form their own theories about who built the ring fortresses and then immediately after given the opportunity to try their theories out by challenging the theories of an expert from the museum (an archaeologist)

\(^1\) See Tables 10.1 – 10.5, Appendix All Tables
5) The museum organized a reception for the students, teachers and general public and invited the press when The Wheel of Fortune was finished, played and put on display.

6) One group of students was put in charge of recording the whole museum experience (iPad film) for future reference, to be published on YouTube.

The common denominator of these six activities is participation. According to Nina Simon, creating a learning setting based on participatory activities creates “unique educational value,” e.g. enhancing people’s skills to work with others from various backgrounds, to think creatively, to master and be critical of information and media sources and products and to think about, understand and manage their own learning. The students interacted with many teachers and museum professionals and, importantly, their opinions and products were taken seriously. The Wheel of Fortune was a creative product, which grew out of what the students learned and experienced in their groups and with the teachers and museum professionals during the first four days of the coursework. Along with the YouTube video, the Wheel was lasting testimony of the students’ interaction with their teachers and the museum professionals. It seems likely that the high level of the students’ participation with the teachers and museum professionals, framed within the museum setting, was a main contributory factor to their clear recollections of their learning.

10.1.3 Behind the coursework: Hammersby teachers and museum professionals

In both sets of coursework, a pedagogical approach broadly supporting experiential learning was chosen by the partnership’s members. Although none of the adult interviewees expressed this approach in theoretical terms, it was apparent from how they described the process from planning phase to conclusion that learning – in the museum-school set-up – that it was understood as collaborative learning based on dialectic processes.

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1 Simon (2010), p. 193
2 Op. cit., pp. 193-194. These are among the skills Nina Simon says are defined by policy-makers and educators as being “necessary for people to be successful, productive citizens in a globally interconnected, multicultural world.” (p. 193). These skills resemble the eight key competences of the EU Lifelong learning recommendation, which are presented in section 7.3.2 above.
3 Another factor might have been that their teacher, Joe, reinforced their learning in ensuing lessons, though that is not documented anywhere. (Dolly, the other teacher involved in this coursework, was not the class’ math teacher.) He mentioned that the students had applied their learning experiences from the coursework in their history lessons many times, which is also reinforcing activity. A third reinforcing activity might have been that the students watched the video Felix and his group had made about the coursework on YouTube in the weeks between the coursework and my interview with them.
meshing experience and concepts, and observations and action.¹ Carl, the museum educator, described how hands-on and physical activities at the museum and at its excavations helped make theories tangible; Dolly, the substitute math teacher, explained that the coursework and the learning environment made it possible for students to make use of a variety of different abilities and skills, much more so than what an ordinary school day provided, and that the students’ learning was unfolded in many physical settings and social situations; Joe, 1s’ history teacher, observed that there were several students who experienced success in their groups because the coursework and the groups were organized in such a way as to enable as many types of students as possible to contribute to their mutual task; Brad, the museum director, noted that the students combined knowledge from school with knowledge from the museum, which gave them a well-rounded understanding of the task at hand; Selma, 2t’s geography teacher, remarked that museum objects have significance in real life and not just for the sake of learning and that the coursework focused more on the process than the product, which made it possible for many different types of students to contribute successfully; Vera, the substitute history teacher in 2t, recalled how the coursework made it possible for students to achieve knowledge through “play”; several of the teachers and museum professionals mentioned how doing the coursework, because it was framed in the students’ local area and its history, became emotionally relevant to them, allowed them to draw on their previous knowledge and experience as well as gave them new perspectives on this familiar territory and their roots; all four teachers noted that the students felt curious about and became absorbed in their work in the museum setting, and that they were motivated by the sense of ownership and responsibility which being put in charge of their own work process fostered in them; and nearly all the teachers and museum professionals were convinced that mixing the two learning environments offered the students a chance to experience how knowledge is created and how subject-related method can be applied in practice and thereby become less abstract.

10.1.4 Summing up: Student’s learning Rethinking Ashton and Ring Fortresses

Regarding Research Question #1: How is upper secondary students’ learning affected by their participation in coursework in a museum learning environment and which has been developed and is implemented by teachers and museum professionals in partnership?, the

¹ See Tables 10.13 – 10.21, Appendix All Tables
preceding sections have given a clear picture of how 1s and 2t students’ learning was affected by their participation in the coursework.

The learning environment created for the 2t students by their teachers and the museum professionals fostered motivation and creativity in the students as well as an ambition to do well. The teachers were also enthusiastic and although the interview students did not mention this, Mickey and both teachers emphasize that it was inspiring for the students to experience teachers and museum professionals who thought this coursework was important and “fun.” The consistency of all three perspectives (interview students’, teachers’ and museum professionals’ and the post-survey data) regarding the students’ learning experiences suggests that students’ learning is enhanced when they are doing coursework which has been developed and is carried out by their teachers and museum professionals in partnership and which uses the museum as a learning environment and resource.

The learning experiences of the students who did the Ring Fortresses coursework were not documented quantitatively, but the 1s interview students’ responses reveal reflections about their learning which are very similar to those of the 2t students and the teachers’ and museum professionals’ observations\(^1\) corroborate the 1s students’ recollections. As did the 2t / Rethinking Ashton teachers and museum professionals, the teachers and the museum professionals in charge of Ring Fortresses collaborated very closely and were often actively involved with the students at the same time. It also appears that the participatory element of the coursework present in Rethinking Ashton was even more pronounced in Ring Fortresses, and added learning impact to the students’ experiences. All in all, like 2t, 1s’ learning experiences suggest that students’ learning is enhanced when they are doing coursework which has been developed and is carried out by their teachers and museum professionals in partnership and which uses the museum as a learning environment and resource.

In both cases, the learning environment created by the teachers and museum professionals legitimatized the students as competent fellow players in their own groups as well as in the museum and school (curricular) context.

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1 On the post-survey questionnaire, thirteen of the students ticked that they discovered new things about their teacher; these “new things” could be her enthusiasm about and interest in the coursework.
2 See Tables 10.16 – 10.10  Appendix All Tables
10.1.5 A comparison of student learning experiences: Brigby and Hammersby

We know that in Brigby, only one (3%) of the thirty students from both classes ticked that he or she had become more likely to visit the museum in his or her spare time. In Hammersby, the corresponding number was eight (36%) out of twenty-two students. Six (20%) of thirty students in Brigby indicated that they might visit the museum in connection with schoolwork. In Hammersby, the corresponding number was eleven (50%) out of twenty-two and all three interview students in 1s felt the same way. Although the numbers are not large, the difference between the Hammersby students’ answers and the Brigby students’ answers is remarkable. Clearly, if museums consider it important to develop young people as an audience who are likely to use the museum of their own free will for either school-related activities or in their spare time, it seems that the Hammersby partnership’s method of organizing coursework is worth emulating.

It must be remembered that the organization and set-up of the coursework of the two cases were quite different and that the partners’ expectations of what was to transpire were also quite different. It is the latter circumstance that is the decisive factor. Brigby teachers and museum professionals and Hammersby teachers and museum professionals had different expectations and ambitions regarding the results of the students’ work at the museum: the level of their expectations and ambitions could be said to be proportionate to their degree of active involvement in planning, organizing and carrying out of the coursework. Through the school’s liaison officer, the two Brigby teachers booked a 90-minute, off-the-shelf program about National Romanticism at the art museum for their two classes. This field trip was to be an inspirational activity leading up the students’ Danish-history paper, providing them with a different perspective on one of the literary and historical periods they had worked with, and the art museum obliged, providing the service and program the teachers expected. The Hammersby teachers and museum professionals were aiming to provide the students with an immersive learning experience, in their five-day long multi-subject course, which took place in many different social and physical settings, thus enabling them to make use of a wide range of abilities and skills in their work.

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1 Although we have seen that there were differences in the learning experiences of the two Brigby classes on the one hand, and of the two Hammersby classes on the other, in this part of the analysis, the two classes in each case are combined and treated as one group of students per case.
2 See Graph BrigbyTotalE4, Appendix Chpt. 10
3 See Graph Hammersby2tE4, Appendix Chpt. 10
4 See Graph BrigbyTotalE3, Appendix Chpt. 10
5 See Graph Hammersby2tE3, Appendix Chpt. 10
The Brigby students were not required to make a product and their process was not assessed. The Hammersby students, on the other hand, were required to make products which were not only assessed but were given an authentic afterlife at the museum.

Once again, Wenger’s analytical terminology is illuminating to use. The various museum settings were an unfamiliar community of practice (CoP) for the Hammersby students and the framework of the coursework and product requirements were non-negotiable. In the various museum settings, there were unfamiliar discourses and artifacts, e.g. archaeological and archives-related terminology and sources in the form of archival material, museum objects, maps and archaeological finds. So far, this (the unfamiliarity) is similar to what the Brigby students experienced. However, the 1s and 2t students’ trajectories into this CoP were prepared for and facilitated by their teachers as well as the museum professionals. The discourses and artifacts were explained and transformed into tools for the students to use to prepare their products, e.g. grasping and utilizing the archives’ database, reading the maps and sources and comparing them with the present topography of the ring fortresses or comprehending how archaeological finds are used to create theories about past events. To the extent that it was possible within the bounds and purpose of the coursework, the museum and school activities supported the students in building a shared repertoire with the museum, giving them a sense of becoming competent, legitimate members of the museum CoP. This was especially so for the students doing the Ring Fortresses coursework, who learned about how to question existing theories regarding the builder of the ring fortresses and were given the resources to develop their own theories about this. Afterwards they met with one of the museum’s archaeologists to discuss their own theories contra his.

The students in both cases worked in groups. They also met and communicated with museum professionals and experienced their teachers in a new context. Therefore the next part of the comparison of the two cases focuses on the social aspect of their learning experience. Attention is given to the plainly significant element of participation.

In both cases there are two main areas or dimensions of social engagement: 1) students-students (within-group) and 2) students-adults. Regarding the second dimension, the adults in question are the teachers and museum professionals involved in planning and

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1 The museum, archives, archery range, ring fortresses, Viking burial grounds and excavation sites
2 In this context, it is more illuminating to apply Nina Simon’s theory regarding the educational value of participation in museums and Olga Dysthe’s theory regarding dialogue-based teaching. For a review of Wenger’s concept, “Participation” and its sister concept “Reification,” see Section 8.1 above.
carrying out the coursework and who were interviewed.\(^1\) In Fig. 10a,\(^2\) an overview of the findings, based on an extraction of the relevant core content of the interviewees’ responses, illustrates similarities and differences in their experiences of their interaction within the two dimensions.

Due to the nature of the coursework and its setting, and due to the fact that both Brigby and Hammersby groups had been organized by their teachers, the students discovered skills and strengths in their classmates that they had not seen before,\(^3\) which they considered to be a positive result of the coursework. Indeed, this is an important social learning outcome. In Brigby, their group work was not binding in that they were not required to develop a product that would be assessed, so relying on each other’s skills was not as necessary or expedient as the Hammersby students experienced that it was in their groups. Basically, the Brigby students’ activities at the museum were more free-choice than those of the Hammersby students. However, the condensed information in the “student-student” columns of Fig. 10a reveals that the Hammersby students also perceived their learning situation as free-choice and self-directed; there is no mention of mandatory products or assessment in relation to their group work. The information also reveals that in Brigby, there were students who experienced the disintegration of their group work when group members became frustrated and unfocused or did not take the work seriously.

Nina Simon’s reflections regarding the educational value of participation are helpful to use when describing the difference in how the classes in the two cases perceived their group work, specifically her thought about “the value of giving participants real work.”\(^4\) The work which the Hammersby students were given to do and the products they were required to make served two purposes: 1) as subject-related assignments and 2) as contributions to the museum. It was “real work” and animated them to collaborate and draw on each other’s strengths, bound their activities at school and at the museum.

\(^1\) The teachers in Brigby are Beth and Heather, the museum professional is Tammy. In Hammersby, the teachers are Selma, Vera, Dolly and Joe and the museum professionals are Brad, Mickey and Carl.

\(^2\) See Fig. 10a, Appendix Chpt. 10

\(^3\) All the students in Brigby were 1st year students as were the 1s students in Hammersby, meaning that they may not have done much group work with each other prior to this coursework.

\(^4\) Simon (2010), p. 195. According to Simon, “real work” is work that visitors do which contributes content or research to a museum. “Real work” projects generate three types of value: Learning (learning creative skills), social (visitors gain more self-confidence in relation to the museum and feel more connected to it) and work (visitors create something that is of use to the museum). The visitors in Simon’s book are people who visit the museum of their own accord, but the learning, social and work value of “real work” is just as relevant in relation to the Hammersby students, just as authentic questions are, see Dysthe (2013), pp. 83-84
together, connected them to the museum as well as aligned itself with their agenda\(^1\) (motivation + strategy) as students.

Another illuminative perspective to take when regarding the differences in how the students’ group work functioned is Olga Dysthe’s theories about dialogue-based teaching.\(^2\) According to Dysthe, “dialogue-based” means that meaning is created and developed through dialogic interaction by people who are situated in specific context.\(^3\) In dialogue-based teaching, a core value is multivoicedness, and great importance is attached to creating opportunities for learners to create and develop meaning through social interaction, e.g. learning from the exchange of viewpoints and ideas with others.\(^4\) In school or at the museum, it is the teacher’s and/or the museum professional’s responsibility to create the framework and conditions for these exchanges to occur. In an interview in Folkeskolen,\(^5\) Dysthe explained that a cornerstone of dialogue-based teaching is to ask the students “authentic questions,” which are questions to which the teacher does not have the answer and which compel the students to think for themselves. According to this definition, the students in both Brigby and Hammersby were asked authentic questions, which they themselves were aware of and appreciated, as we have seen from their responses. Dysthe went on to explain that for group work to be a successful learning experience for students, the students: 1) must be equipped with the tools and information needed to accomplish the task, 2) must enter into a dialogue with each other and the task at hand, and 3) must be “substantially engaged.”\(^6\) Being substantially engaged means that both students and teacher(s) (and museum professionals) are engaged in the subject-matter\(^7\) and subsequently challenge and discuss each other’s ideas and conclusions.\(^8\) As we have seen, the Hammersby students’ group work was organized in this way and they, their teachers and the museum professionals were all substantially engaged in the subject-matter.

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\(^1\) Falk (1998), p. 106
\(^2\) Dysthe’s theories were primarily inspired by Russian philosopher of language and literary theorist Mikhail Bakhtin’s (1895-1975) theories regarding dialogic communication, the centripetal and centrifugal forces in languages and utterances, and utterances’ historical embeddedness (e.g. utterances are always influenced by what comes before and what will happen subsequently). Andreasen (2008), pp. 12-13.
\(^3\) Dysthe (2013) pp.45-46
\(^4\) Ibid.
\(^5\) Danish grade school teachers’ professional journal
\(^6\) Hvid (1999), p. 2
\(^7\) Ibid.
Not surprisingly, the differences between the students’ social interaction in the two cases is mirrored in their interaction with the teachers and museum professionals, respectively. The information in the row “students-teachers” in Fig. 10a reveals that while the Brigby students and the teacher enjoyed feeling more equal to each other, neither teacher nor student were completely at ease in this newfound role. For example, the students were not quite convinced that their performance was not being assessed by their teacher, and the teachers knew that they were responsible for monitoring the students’ behavior and therefore maintained their teacher-role in that area. The teachers withheld answers to subject-related questions from the students so as not to intervene in the museum’s program, and were not completely clear about what was to happen at the museum. In Dysthe’s terminology, they were not substantially engaged.

The interaction between the Brigby students and the museum educator at the museum was positive although the students were shy about asking her subject-related questions. They perceived her as being helpful and knowledgeable and were motivated by her manner towards them. The museum educator made it clear to the students that she would not answer their questions about the content on the program because it was up to them to make up their own minds about what to use and how to use it. In Dysthe’s terminology, the museum educator was building a framework within which the students were to use the museum’s source materials and works of art to create and discuss their own ideas and viewpoints in the group. The debate at the end of the program can also be seen as a dialogue-based activity by means of which the museum educator was attempting to create a space for the exchange of the students’ perspectives.

Regarding the Hammersby students and their teachers and the museum professionals, the information in Fig 10a tells us that their interaction was characterized by the teachers’ and museum professionals’ interest and active involvement in the students’ work and activities, which made the students feel that they and their work were taken seriously. Because of the way the coursework was organized, the students were given the opportunity and time to get to know the museum professionals a little bit and learn about their work. The teachers and museum professionals provided the students with the tools and information needed to accomplish the tasks as well as an authentic context in which to deliver their products.

On the basis of what we have learned so far in this chapter and the previous one, it seems safe to say that the success of the Hammersby students’ learning experience was
largely due to how the teachers and museum professionals exploited the pedagogical potential of both learning environments (school and museum) without losing sight of the fact that this coursework had to live up the curricular requirements of multi-subject courses. The teachers and the museum educator of the Brigby partnership chose a different framework for their interaction, similar to a traditional museum visit. However, the RomanticArt program, which was the result of the previous year’s successful collaboration in the partnership, did not lend itself well to such a short visit as it required a long introduction and a certain amount of practice to use properly. So although the program had been devised to create a dialogue-based learning experience for the students, the conditions it was given did not support its optimal execution.

In any kind of collaboration, communication with a view to clarifying expectations, responsibilities and goals is the key to that collaboration’s success. In the following, the Hammersby collaboration is the object of analysis.

10.2 Analysis Part 2 – Collaboration

During my interviews with the Hammersby teachers and museum professionals, I asked them to describe the collaboration between the school and the museum and their responses, as presented in condensed form in Table 10.13, are the foundation of the analysis in this section. It is plain to see that the two collaborations shared a great commonality as to their approach to the purpose, content, goals and design of their collaborations, both of which are therefore analyzed together. Any significant difference will be analyzed separately.

1 Appendix All Tables
2 Information from other Hammersby tables will be included when relevant.
3 Selma and Vera, the teachers in Rethinking Ashton, were very inspired by what their colleagues, Dolly and Joe, told them about the coursework they had developed and carried out with the museum, and were interested in trying out the same kind of collaboration. Furthermore, Brad participated very actively in both sets of coursework, and brought his experience and understanding from the first set into the second.
4 See Appendix Partnership Introductions and Field Notes for a description of two preliminary meetings of the Rethinking Ashton collaboration. As with the class Hammersby class 1s, I have no eye-witness account of the Ring Fortress collaboration. The findings regarding their collaboration are based solely on what they told me in the interviews. Joe, Dolly and Carl were interviewed together; Brad was interviewed separately, as he was involved in both sets of coursework. According to the interviewees’ descriptions, their preliminary meetings were very similar to those described in the Rethinking Ashton collaboration.
10.2.1 Analysis of the Hammersby collaboration

Michelle Phillips’ characterizes Genuine collaborations or collaborative partnerships as being “relationships between organizations that transcend basic cooperation”¹ and who work together to plan, develop, carry out and evaluate projects, or, in Wengerian terminology, to negotiate and participate in joint enterprises. Phillips adds that people involved in a genuine collaboration communicate openly and frequently with each other, draw on each other’s resources and delineate common goals. This definition seems to fit the Hammersby partnership very well. Furthermore, the participants in the Hammersby partnership felt that they had gained important knowledge from working with each other.

Like Beth and Heather of the Brigby case, Selma and Vera were “second generation” teachers in their school’s partnership with the museum. Their overall observations regarding the collaboration were very similar to Joe’s and Dolly’s, not least regarding the museum professionals’ flexibility, openness and readiness to integrate the museum and its contents in their students’ school-related activities. The above description of their first meetings with museum director Brad, museum educator Carl and archivist and historian Mickey testifies to this observation.

In his interview, Brad stressed that it was best for the outcome of the collaboration if he and the other museum professionals “started from scratch” every time new teachers from their partner school were involved in a project. Brad brokered the boundary between the two communities of practice (the teachers’ and his own at the museum) by telling the teachers about the museum, its areas of responsibility and so forth. His legitimacy as a broker was threefold: He was the director of the museum, he and the principal of the school both actively supported their institutions’ membership of intrface, and he had participated in the previous collaboration with Joe and Dolly. By telling teachers who were newcomers in the partnership about the museum and what it could offer as well as suggesting possible scenarios and material for the students’ coursework, he was translating and adapting the shared repertoire he and others from the museum had developed with Joe and Dolly during the first collaboration. He was speaking from experience and thus projected himself as a competent member of this partnership² who knew how to advance their joint enterprise. Carl had also participated in the Ring Fortresses coursework and thus

¹ Phillips (2006), p. 8
² Please note that I do not call the partnership a community of practice although it resembles one in many ways. The list of fourteen CoP characteristics indicate a much closer and longer collaboration, see Fig. 8a Appendix Chpt. 8
he too appeared as a competent member of the partnership. His and later Mickey’s participation in the Rethinking Ashton collaboration was different from Brad’s, however, in that they were Brad’s staff members and were therefore likely to follow his lead-in however he chose to frame the collaboration.

Having learned about Joe’s and Dolly’s collaboration and about the Ring Fortresses coursework and its success, Selma and Vera entered into the partnership with certain expectations and ambitions. Furthermore, like Joe and Dolly, they were on the same level as their partners at the museum as regards their professional status, training and experience. So although Selma and Vera were newcomers in the partnership, their legitimacy was unquestioned and they were regarded and treated as competent negotiators of its joint enterprise.¹

Both the Ring Fortresses and the Rethinking Ashton collaborations followed a pattern which is very similar to the phases of Shirley H. Hord’s “Collaboration Model.”² Recurring words in this model are “sharing”, “mutual”, “both (organizations)”, “combined”, “agree”, “join”, “joint (project, effort, benefits)” – all words that describe a non-hierarchical relationship between the partners, which is how the Hammersby teachers and museum professionals viewed their collaboration. Although Brad emphasized that it was (and is) the museum’s responsibility to provide services to the teachers, the services themselves and how they were to be provided were open to negotiation. Brad went on to say that “the art is to get the two realities to slot together”, which requires a great amount of flexibility from both partners. According to Brad, ambitious projects can be accomplished if the partners are sufficiently flexible and respect and communicate openly with one another. According to Hord, communication is “the keystone of success” in collaboration, not only collaboration between the partners but also across the partners’ own organizations.³

¹ The same could be said about Dolly and Joe in their first collaboration with the museum.
² Hord (1986), pp. 24-25; See Fig. 8g, Appendix Chpt. 8
³ Ibid. It is interesting that the only murmurs regarding the collaboration had to do with Brad’s role. These surfaced in the group interview with Dolly, Joe and Carl. Carl said that there had been three museum people involved in the Ring Fortresses coursework and that he himself had been unsure of what his own contribution was to be in this set-up. In his opinion, it would have worked better if it had been made explicit which one of them was actually in charge. Dolly added that at the outset of their collaboration with the museum, Joe’s and her contact at the museum was Brad and that he was often hard to get in touch with because he was called away on other business. She said that it would have optimized the partnership’s communication if Carl had been her contact instead. After mentioning this in the interview, Dolly and Joe agreed to inform the next generation of the partnership about this. Apparently they did so because Selma and Vera did not mention any delays in their communications with the museum. In other words, like Brad and Carl, Joe and Dolly were also brokers who were facilitating Selma’s and Vera’s engagement in the partnership’s joint enterprise by sharing their
An important “reality” the partners dealt with was planning, organizing and delivering the multi-subject coursework in such a way that the strengths of both learning environments were brought into play for the benefit of the students. It was the partners’ participation in this process that constituted the brokering of the boundary between them and the negotiation and reification of a practice that spanned it. In this process, the partners learned about the boundary, about what was on the other side of the boundary and, not least, what was on their own side of the boundary. The process and nature of this boundary crossing changed over time as the participants’ knowledge about one other increased. Akkerman’s and Bakker’s “Four types of learning at the boundary” offers relevant terminology to describe the learning that took place as a result of the Hammersby partnership’s collaborative effort. Selma said that she and Vera learned a lot about each other from seeing one another perform in a different context in the “real world” outside the school environment. Mickey expressed how participating in this collaboration opened up a whole new world for him, e.g. learning how different it was to communicate with upper secondary school students compared to his normal fifty-plus clientele. He explained that he and Vera had talked a lot about what they wanted the students to discover and how to go about making sure this happened so he felt he had learned about what the teachers needed and wanted him to offer the students. Carl remarked that by participating in this collaboration he had become clearer about what the museum had to offer upper secondary schools and that he could apply this knowledge in relation to other upper secondary schools. Mickey explained that he and Brad were adapting the coursework to fit other schools, i.e. they were changing the museum’s practice. All four teachers stated that they would incorporate their experiences from working with the museum in relation to this coursework in future projects. These are examples of learning at the boundary, which Akkerman and Bakker call “Identification”, “Reflection” and “Transformation”: By identifying and reflecting on the convergence of their practices, the individual partner became aware of differences and similarities between them and gained a new perspective on his own practice by experiencing it from the perspective of his partner. As a result of their “learning at the boundary” between the practices, the collaboration’s participants

1 Akkerman (2011), p. 3
2 Ibid.
were either in the process of changing (transforming) their practice or had plans to do so. An example of a boundary crossing that resulted in the fourth type of learning, “Coordination”, was when Vera and Mickey met at the archives prior to the coursework so that they could coordinate what was to take place there in order to make their future collaboration easier, e.g. as facilitators of the students’ work at the archives during the coursework week.

10.2.2 Summing up: Hammersby collaboration

How do the findings of the analysis in Part 2 answer research question #2: How are the teachers’ and museums professionals’ understanding of their own and their partner’s communities of practice affected by their collaboration to develop and carry out coursework for students in a museum learning environment?

The partners’ overall ambition was to develop coursework that generated a rich, varied, challenging and inspiring learning environment which the students could use as a basis for such important learning activities and outcomes as building their knowledge about method and research and the creation of knowledge, honing their critical thinking, deepening their sense of place and belonging, widening their understanding about different types of learning, gaining experience in self-directed learning, broadening their social skills and tolerance, becoming sensible of the function and significance of museums, expanding their concept of history and its influence on their here and now.¹ This, then, was their joint enterprise. Each participant contributed his or her expertise to the development of this coursework, which, in Hord’s terminology, generates a “‘We’ process mode” and a sense of “system ownership.”² The partners’ sense of ownership was accompanied by a feeling of being responsible for the success of its enterprise.³ As we saw in the previous section, the Hammersby teachers and museum professionals were all actively involved with the students during the week of the coursework, supporting and facilitating their learning experiences.

The conditions under which their joint enterprise was negotiated were optimal. Management at both institutions supported the partnership. Although teachers and museum professionals alike saw the lack of time and funding as possible threats to future

¹ See e.g. Table 10.19, Appendix All Tables
² Hord (1986), p. 24; See Fig. 18g, Appendix Chpt. 8
³ See e.g. Table 10.13, Appendix All Tables
collaboration,\(^1\) it was also clear by how successful they portrayed the coursework and collaboration as being that they felt that the time spent on the collaboration was well-spent. As we have seen, both teachers and museum professionals were interested in learning about their partner’s CoP. Both management and participants understood the rewards\(^2\) that their collaboration yielded, i.a. the partnership’s joint endeavor made it possible to offer and carry out coursework that neither of them could have done alone.

**10.3 Summing up - Hammersby Gymnasium & HF and Hammersby Museum**

In Chapter 10, the analyses of the Hammersby students’ interview and online questionnaire responses painted a positive picture of their learning experiences and outcomes. This picture was corroborated by what their teachers and the museum professionals said about the students’ learning outcomes in their interviews. As in the preceding chapter, the GLOs were used as a framework for the qualitative and quantitative analyses of the students’ learning experiences in the museum setting. The analytical findings generated by the quantitative data are in more or less accord with the qualitatively generated findings. Both revealed positive learning outcomes within all five GLOs.

The GLO analysis also generated findings that were comparable to the Brigby case findings. The comparison of how the Hammersby students recollected their learning experiences to how the Brigby students remembered theirs revealed that the Hammersby students felt more authentically involved in the coursework, not only in their group work but also in their interaction with the Hammersby teachers and museum professionals and with the museum setting (archives, ring fortresses and so forth). Using Olga Dysthe’s concept of dialogue-based teaching and its related terminology provided explanations for the success of the Hammersby coursework. An important ambition of the partnership’s joint enterprise was that both teachers and museum professionals would interact with the students and share the responsibility of carrying out the coursework.

The analysis of the Hammersby teachers’ and museum professionals’ interview responses revealed that they were more substantially engaged in both planning and carrying out the students’ coursework than their Brigby counterparts and this was done by establishing an open, flexible, non-hierarchical collaborative practice across the boundary between the two learning environments. As before, Wenger’s terminology was used to describe the teachers’ and museum professionals’ participation in the process of brokering

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\(^1\) See Tables 10.20 – 10.26, Appendix All Tables

\(^2\) Hord (1986), p. 25; See Fig. 8g, Appendix Chpt. 8
Phillips’ concept of collaborative partnerships and Hord’s collaboration model were relevant to use as analytical perspectives on the workings and development of the cross-boundary practice in the Hammersby case. Akkerman’s and Bakker’s classification of four types of learning at the boundary offered a way of characterizing the learning that the teachers and museum professionals experienced from working together.

Even after the very different circumstances surrounding the coursework in each case are removed from the equation, it is clear that much less time and effort were spent organizing and carrying out the coursework in the Brigby case than in the Hammersby case. Even so, the Brigby teachers and the museum educator were relatively satisfied with the results of their interaction, as were the students. In comparison, there was nothing “relative” about the satisfaction that the Hammersby teachers and museum professionals felt and expressed regarding their collaboration and the success of the coursework. They invested a great deal of time and effort in their collaboration and this resulted in quality coursework and learning experiences for the students. It is difficult to put a value on learning experiences but based on the analyses of the two cases it seems safe to say that the quality of the learning experiences of the Brigby and Hammersby students was proportionate to the quality of the collaboration between the teachers and museum professionals. So in answer to the question posed at the end of the previous chapter: It depends on how high the partnership sets its sights when planning coursework for students. If teachers and museum professionals perceive and appreciate the learning potential that can unfold at the interface between the two learning environments, and actively make the decision to engage with and invest in one another’s competences in order to realize this potential, high caliber learning experiences for the students can be developed, as we have seen in the Hammersby case.

In the next chapter, the analysis of the Shoresby case reveals that this partnership, normally dedicated to highly ambitious collaboration, showed signs of “metal fatigue” in its third year as a partnership. The natural question to ask, and the question the following chapter attempts to answer, is if the students’ experience of the coursework the Shoresby teachers and museum professionals put together for them was influenced by this condition.
Chapter 11: Shoresby Gymnasium – Shoresby Museum

At this point in the dissertation, a certain level of saturation has been reached in the findings of the analysis regarding the case students’ experience of the museum as a learning environment, e.g. their enjoyment, being given free rein in the structuring and planning of their work (self-determination, intrinsic motivation), being allowed to explore and move about freely at the museum and its sites (free-choice, intrinsic motivation), being asked authentic questions and making products that have an authentic afterlife and are taken seriously by teachers and museum professionals (dialogue-based learning), being required to engage in a variety of learning activities (different learning styles are given the opportunity to unfold), being required to draw upon each group member’s strengths (collaborative learning), and engaging with the real world outside of school (authentic learning environment). Focusing selectively on certain aspects of their learning experience in the Shoresby case and the next two cases allows us to zero in on other important factors in relation to the research questions and avoid too much repetition.

The Shoresby case is interesting because it exemplifies how a partnership deteriorates if its collaborative practice and communication lines are not maintained. It also demonstrates that the students’ learning outcomes are affected by this, though not necessarily adversely. The focus of the analysis in Part 1 - Student learning outcomes is on how the students remembered their learning at the museum: How was it different from their learning at school? How did they rate what they learned from the museum professionals compared to what they learned from their teachers and how was this reflected in the way they used the museum in their coursework and in their presentations? How were their products (posters and oral presentations) influenced by what they learned at the museum? From this narrow perspective, how do 1d’s learning experiences compare with those of Brigby students and Hammersby students and what does the comparison tell us?

In Analysis Part 2 - Collaboration, the Shoresby teachers’ and museum professionals’ interview responses are treated in a similar manner, i.e. special attention is directed to responses by the teachers and museum professionals that provide insight into how they

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1 As a reminder: The Shoresby case was different than the other four cases in that it was the pilot study. See Section 6.1 for a full explanation. See also the Partnership Introduction in Appendix Partnership Introductions and Field Notes.
experienced their collaboration, specifically regarding planning and carrying out the coursework and their shared responsibility of facilitating the students’ learning process.

**11.1 Analysis Part 1 – Student learning outcomes**

On June 6, 2011, I interviewed four 1d students, Neal, Richard, Sean and Suki, from Shoresby Gymnasium about how they recollected their learning experience two months earlier at Shoresby Museum. They were generally quite positive in their responses. In answer to a question about whether or not working at the museum had changed how they learned or presented their learning, Suki replied, “I haven’t changed anything, not in the way I acquire knowledge or in how I present a topic. But I think it was fun to be at the museum.”

This response accurately summed up the interview students’ overall view of their learning experience at the museum. Moreover, their responses indicated that during this coursework, entitled “The Industrial Revolution in Shoresby, focusing on technological development”, they were quite focused on their subject-related learning and on making a good impression on their teachers in order to secure a positive assessment. Their experience of the museum was that it offered an authentic framework for their presentations, e.g. they could take pictures of the objects to use on their posters, they could place their posters in front of relevant objects or exhibits or they could borrow objects from the museum to use as decorations in their stands. Although they were expected to find an object or exhibit to use in conjunction with their topic, they did not learn how to incorporate them as an integral part of their learning and, consequently, did not think to integrate them in their presentations.

As far as GLO 1 (Knowledge and understanding) is concerned, the four students agreed that in relation to their history syllabus, working and learning at the museum was very relevant, e.g. learning about living conditions and women’s rights during the industrial age. In relation to the physics syllabus of this coursework, they felt that their learning had taken place at school, and they saw their work at the museum mostly as an extension of or supplement to this learning, e.g. the museum staff members could not help them with physics or with physics-related questions about electricity but helped them find objects that they could use for their stands on Presentation Day. Richard explained, “It depends on the

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1 Table 11.5, Appendix All Tables
2 See “Coursework”, Shoresby, Appendix Partnership Introductions and Field Notes
3 Table 11.1, Appendix All Tables
subjects, this museum is not geared to the sciences but more to the humanities … like Danish … and history and social studies.”

According to Richard, they learned about how to prepare their oral presentation of the exhibit or object, which was one of the requirements of the coursework, from their Danish teacher in school. However, they also picked up some important pointers from the two museum professionals, Oliver and Dean; the students noticed that the museum professionals were good at “reading” their audience and adapting their interpretation to match listeners’ needs and interests. All three boys said that they made use of this knowledge in their presentations, e.g. when they scaled down physics content they judged to be too complex for the ordinary listener to understand. All four interview students had clear recollections of Oliver’s descriptions about living conditions in the 1880s apartment and Suki and Richard had noticed that he anchored his narration to objects and exhibits (e.g. the chair with a hole in it, the “icy” bedding, the unhygienic cuspidor, the draughty windows), which made their experience of history more concrete, intimate and emotional. In fact, the greatest difference between the museum professionals and the teachers, according to the interview students, was that the information they were given by the former was more personal, affective and concrete than the information they were given by their teachers, and that being in historical milieus and surrounded by historical objects made their experience there interesting and memorable. What is interesting is that the students did not implement their new understanding of and insight into the learning potential of museum objects and milieus in their own presentations, which brings us to GLO 2 (Skills), specifically what the students learned about written and oral

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1 Interview with Richard (1d Shoresby) Their opinion was possibly more based on a conventional understanding of cultural history museums than a considered reflection on what they actually experienced and remembered from their coursework there: One of the things that made a deep impression on them was the museum director’s explanation about why the original drawn sheet glass in the windows in the Workers’ apartments had to be replaced with double-glazed windows. Damp and cold seeping through cracks between the window panes and the frames caused mildew on the furniture and mold in the walls of the apartments. In order to preserve the apartment and its contents, it was necessary to compromise on the apartment’s authenticity by replacing the original windows. So although the discussion with the museum director ended up being about compromising authenticity, it started out with a relatively scientific talk about indoor climate conditions and the effects of damp and cold on furniture and walls.

2 Table 11.2, Appendix All Tables. These comments were coded as communication skills under GLO2 (Skills), but could also have been coded as subject-related knowledge, as their oral presentation at the museum was part of their oral Danish syllabus.

3 Table 11.1, Appendix All Tables

4 Ibid. See also Tables 11.3 and 11.6, Appendix All Tables

5 Table 11.6, Appendix All Tables
communication. Richard said that they learned about making posters and speaking publicly from their Danish teacher and all four students explained that they were taught not to learn their speeches by heart but to learn the structure instead. Suki mentioned that they also learned how to make their poster interesting to look at. Their Danish teacher organized a session with one of the museum curators, who told the students about how he wrote and designed banners and signs and other promotional material for the museum’s exhibits and openings, explaining about e.g. typeface and -size, readability and syntax, and Sean said that he and his group used short sentences on their poster, as the curator had recommended.

The museum curator’s introduction to a few of the museum’s forms of written communication was an example of how the museum’s approach to a subject – in this case Danish – interfaced with the school’s approach to the same subject. However, despite the museum curator’s recommendations, the posters themselves revealed that the students were more intent on communicating subject-related knowledge, using a large amount of text and many photos to do so, than they were concerned with making posters that their listeners could see when the students used them to present their topics. The photograph in Ill. 11h shows how far away the listeners were standing from the poster. The presenters themselves were standing too far from the poster to be able to read it or even point at it while they were explaining what it said to their listeners. This poster was placed in front of the museum object the group had chosen for their topic, namely a very large steam engine, which they did not incorporate in their presentation.

The photograph in Ill. 11e shows a different situation in which the group of presenters were physically close to their poster and their audience due to the smallness of the room. This group’s topic was “Heating – before and now” and they pointed to the photos on the poster when they were talking about e.g. how the residents of this apartment used a gas oven to heat it during winter. They did not incorporate or point at the actual gas oven directly behind the poster.

The posters in these two examples, and the way they were used in the presentations, were similar to the other groups’ posters and presentations. This indicated that what the

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1 Table 11.2, Appendix All Tables
2 See Ill. 11a – 11g, Appendix Chpt. 11
3 Appendix Chpt. 11
4 Appendix Chpt. 11
5 See the other posters in Appendix Chpt. 11. See also Ill. 11f, which is a photo of a relatively successful presentation. It shows a stand where a group of boys had produced a banner with the title of their topic in very large letters and hung it up on the wall in back of their stand. They had produced two large
students might have learned from observing how Oliver used objects to anchor and enliven his narration and from listening to the museum curator’s explanations about the museum’s written communication was eclipsed by their ambition to follow their teachers’ instructions as well as meet the requirements of the coursework subjects’ syllabi. In the course of the interview, the students’ comments indicated that they had been quite preoccupied with making a good impression on their teachers during the coursework. Richard was less formal with the museum professionals and both he and Neal were less worried about asking them questions because it would not affect their grades. Suki said that it made a difference to her and her group when there was a teacher among the listeners. She said, “In my group, we were very nervous about making a mistake when our history teacher came by but afterwards he told us that we had done well so then we were really happy.”

Neal said that he and his group made an extra effort to use correct Danish terminology when their Danish teacher came by. Sean would have liked to have been given an individual grade for his performance during his group’s presentation, at least in Danish and history because he had done really well. Kevin, the history teacher, told them that individual grades were not suitable to use for this kind of coursework. However, the students knew that their performance was being assessed and would influence their grades for the year’s work in all three subjects.

As far as GLOs 3 (Attitudes and values) and 4 (Enjoyment, inspiration, creativity) are concerned, it was clear from the students’ responses that they felt that they had learned a lot about the museum and the people who worked there. Neal thought that the museum professionals were more enthusiastic when they talked about history, and took their time when they told the students about an object or exhibit, contrary to the teachers, who

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1 Interview with Suki (1d Shoresby)  
2 Tables 11.3 and 11.5, Appendix All Tables  
3 Table 11.3, Appendix All Tables. The students were also nervous about performing for their parents; Neal said it was important for their parents to see that their children were doing well in school and getting good results and Sean was happy because his parents had seen him and his group do really well.  
4 Table 11.6, Appendix All Tables
rushed ahead when they were teaching a subject in class. Sean and Richard added that some of the people at the museum had personal experiences with the exhibit or object in question, e.g. the Auntie in the kitchen, and this gave their narration more “soul”. All four of the students emphasized how helpful the museum staff members were and said that their attitude towards the museum had become more positive as a result of working there during part of the week of the coursework. When asked if they would visit the museum in their spare time, the three boys said that they might and Richard and Suki said they might visit the museum if it was for school. Sean also said that he would rather go to MacDonald’s in his spare time and Suki said she might visit another museum in her spare time, especially an art museum.

In much the same way as in the Hammersby case, the success of the Shoresby coursework from the students’ perspective was mainly due to the agreement between their agenda (motivation + strategies) and the learning environment created by the requirements and activities of the coursework. Like their Hammersby counterparts, the Shoresby students were “groomed” for the coursework: In all three subjects their teachers had carried out lessons targeted at preparing them for it. Furthermore, the products they were required to make were identical to products they were familiar with from school so the strategies they normally employed for schoolwork were legal tender here, too. The only difference was that the posters were to be displayed and the oral presentations given at the museum. The biggest challenge the Shoresby students faced was speaking to such a large audience, not least their parents. However, the fact that their parents would be among the listeners was a motivating factor and similar to their motivation to do well when speaking to their teachers. Unlike Hammersby and Brigby students, 1d students were not required to use museum sources (e.g. archival material, archaeological sites, maps and tools, original paintings, artists’ correspondence) in order to do the coursework. Consequently, their learning at the museum and how they interacted with it remained exterior to their products. The coursework was devised to fulfill curricular requirements and the students’ products could have been produced at school without using the museum. The museum provided a

1 Tables 11.1 and 11.6, Appendix All Tables
2 GLO 5 (Activity, behavior and progression)
3 Falk (1998), p. 106
4 Appendix Partnership Introductions and Field Notes, Shoresby, p. 23
5 See Table 11.3, Appendix All Tables
6 Working hard to do well in order to make a good impression on teachers or other figures of authority is an example of extrinsically motivated learning behavior.
suitable background and various props for the students’ oral presentations as well as a venue for the social event following them.

So as an answer to Research question #1, a significant finding of the above analysis is that the students’ learning experiences were affected by the lack of collaboration between the teachers and the museum professionals if we consider not only what they learned but also what they did not learn. As we have seen, the students were not required to learn about and therefore did not integrate the museum’s exhibits and objects into presentations. The museum was peripheral, not integral, to their learning in this coursework. In fact, it could be said that the coursework they were required to do had not been “developed and implemented … in partnership”, which, to a certain extent, made it similar to the coursework of the Brigby case.

In the following, the teachers’ and museum professionals’ collaboration is analyzed in order to discover why and how the collaboration between the partners deteriorated.

**11.2 Analysis Part 2 – Collaboration**

Although this partnership had existed for three years, and two of the 1d teachers and the museum professionals had worked together before, the relationship between Shoresby Gymnasium and Shoresby Museum in this case was more like that of a Phillips’ cooperative than a genuine collaboration. Before their first meeting with the museum director at the museum, the three teachers involved in this collaboration, Janine, Holly and Kevin, had more or less agreed on the structure and content of the coursework. Approximately a month after this meeting, the museum received a detailed project description, including the eight topics of the coursework and a timetable for the students’ visits at the museum. More or less like the museum in the Brigby case, Shoresby Museum

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1. Research question #1: How are upper secondary school students’ learning outcomes affected by their participation in coursework in a museum learning environment and which has been developed and is implemented by teachers and museum professionals in partnership?

2. Physics teacher Janine, history teacher Kevin, museum curator Dean and museum director Oliver had all collaborated on other **interface** projects. Danish teacher Holly was new to the collaboration.


4. Appendix Partnership Introductions and Field Notes, Shoresby, p. 22; This was the wording of the e-mail: “Dear ..... Here is the project description that we have made for 1d. At the bottom there is a timetable where we have written in the lessons we can be and would like to be at the museum. Unfortunately, this time it won’t be like two years ago, when we had a whole week, but I hope this will work. You are very welcome to send us comments and corrections. Regards, ... “ Although the last line of the e-mail invited the museum to suggest changes, the fact that the coursework was planned down to the last detail, including what was to transpire in individual lessons, made it difficult for the museum to do so.
was put in the position of being a service-provider to the teachers instead of being an equal player on the field.

One reason for the deterioration of the collaboration in this case was that the museum director, Oliver, and physics teacher, Janine, who had experienced two successful, mutually satisfactory collaborations prior to this one, seemed to presume too much about the strength of their partnership and consequently, did not make provision for sufficient preliminary dialogue about their new joint endeavor. It was assumed that introductory preambles could be done away with because this had been a successful, sustained mutual relationship, and that the enterprise could be set up quickly because the people involved knew what the others knew and what they could contribute to it. The museum director pointed out that he had anticipated a continuation of the partnership’s collaborative practice and a widening of its joint enterprise. It was very clear in his interview responses that his experience of this coursework was characterized by disappointment. Time and again he remarked that there was very little communication between the teachers and the museum, there was no exchange of ideas, no real collaboration initially or during the coursework, no genuine involvement of the museum professionals in teaching the students about how to use the museum, no planning or coordinated effort in relation to Presentation Day. Like Dean, he noticed that the teachers were not really interested in integrating the museum exhibits and objects in the coursework. When I asked him why he had not made suggestions for improvements to the teachers, he explained that he and his staff, out of consideration for the students, would never intervene in coursework that was already underway and that they – he and his staff – had not had a share in developing.

Another reason for the weakness of the collaboration was that the “old-timers” of the partnership did not take into account that there was a newcomer on board and did not facilitate her trajectory into their collaborative practice and shared repertoire. As “old-timers” in their collaborative practice, the museum director and the physics teacher moved along what Wenger calls “paradigmatic trajectories” that, if shared, would provide newcomers, in this case the Danish teacher, with appropriate patterns to follow or routes to take in the negotiation of their joint enterprise. The Danish teacher’s understanding of

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1 See Wenger’s list of fourteen characteristics of a CoP, Fig. 8c, Appendix Chpt. 8.
2 See Oliver, Table 11.7, Appendix All Tables
3 See Dean, Table 11.7, Appendix All Tables
4 Oliver and Dean from the museum, Janine and to a certain extent the history teacher, Kevin, from the school
5 Wenger (2007), p. 156
the nature of their mutual engagement remained unchallenged and her subsequent course of action channeled the partners’ collaborative practice in a direction quite different from its previous course. Right from the beginning and throughout the coursework, the Danish teacher’s ambition was that the students’ learning outcomes in her subject would be relevant to their syllabus and secured through pedagogically sound activities. For example, she spoke at length about how exciting it was for her students to hear about Danish from the curator at the museum\(^1\) and that it was a scoop for her lessons that the students experienced that what she taught them in school was used in an authentic context. Having to produce the posters kept the students on track concerning subject-related work and furthermore, the students realized that their oral performance improved by having to repeat their presentation four times. She saw the museum as an inspiring framework for the coursework\(^2\) and observed that the students had enjoyed having the museum as their workplace. In a way, her experience of the museum in relation to the coursework seemed quite similar to that of her students.

The physics teacher, a partnership veteran, remarked that the museum was not involved in the initial planning and development of the coursework. She and the museum director had talked about developing coursework about water and heating the previous year so the present coursework represented the realization of that ambition. In the interview, she told me that in previous projects with the museum director, he had visited the school and told her students about the museum prior to their visit, but that this time the teachers had not organized it like that.\(^3\) As she herself was involved in the organization of the present coursework, it seems odd that she did not try to influence the two other teachers to collaborate with the museum in the same way as earlier. An explanation could be that this coursework was the result of a one-on-one boundary encounter\(^4\) between herself and the museum director and as such became her personal project in her own subject, physics. This leads to the third reason for the disintegration of the collaboration.

This was not multi-subject coursework as previous collaborations between Janine and the museum had been. In multi-subject courses, the participating teachers are required to be acquainted with each other’s subjects, e.g. method and theory, when planning and evaluating the students’ work. This coursework was “co-disciplinary”, meaning that the

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1 See Holly, Tables 11.7 and 11.10, Appendix All Tables
2 See Holly, Table 11.12, Appendix All Tables
3 See Janine, Table 11.7, Appendix All Tables
4 Wenger (2007), p. 112
teachers worked in tandem within three parallel subjects. The teachers’ interest in and contributions to the coursework were considered in relation to their own subjects, e.g. what the students would gain in Danish and history and physics, respectively, from the coursework. In other words, it was not really a joint enterprise for the teachers either as they did not have to invest themselves in each other’s work or think in cross- or multi-curricular pedagogy or didactics.

As the museum educator Tammy did in the Brigby case, the museum professionals at Shoresby Museum fell back on their usual practice and carried out the coursework as they would any other educational visit by a class and its teachers. In the Brigby case, however, the coursework was booked and carried out as a package deal, so Tammy did not expect a high level of collaboration with the teachers. In the Shoresby case, as we have seen, the museum professionals’ expectations were disappointed and the partnership suffered from it. However, both Oliver and Dean thought ahead to future collaborative projects with the school, with due regard to what they had learned from this coursework. Oliver and the Danish teacher, Holly, both regretted that they had not evaluated their collaboration. An evaluation might have created a platform for a re-negotiation and possibly a re-definition of their joint enterprise. In my view, the fact that they were unable to find the time to evaluate this coursework was an indication of the partnership’s “metal fatigue” I mentioned at the end of the previous chapter. In addition to that, it is rarely pleasant to evaluate a less than successful collaboration.

Research question #2 asks, “How are the teachers’ and museums professionals’ understanding of their own and their partner’s communities of practice affected by their collaboration to develop and carry out coursework for students in a museum learning environment?” A result of the Shoresby collaboration was new insight into what such a collaboration could potentially become. In the course of our interview, the Danish teacher expressed regret that she and her colleagues had not asked the museum professionals to help the students understand how to explain the exhibits and objects directly and not on the basis of their posters. After the coursework, she realized that the museum professionals had felt that they should have been the ones to welcome the parents to the museum and that she and the teachers had handled that situation rather clumsily. She ventured that teachers can be rather closed and feel and act like experts. She seemed to have seen her

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1 See Dean and Oliver, Table 11.7, Appendix All Tables
2 See Holly, Table 11.7, Appendix All Tables
own community of practice and a few of its limitations with new eyes by witnessing and participating in its interaction with a different community of practice. She seemed to come to an understanding about the collaboration that reflected what Wenger said in his interview: “.... the people who are successful are the ones who are truly acting as learning partners, bringing whatever they can from their practice to the table as opposed to kind of taking advantage, instead of kind of reproducing an inequality” and that an indication of a non-hierarchical genuine collaboration would be, again in Wenger’s words, “how much people draw on the other person’s practice, to create a space between them that is a true learning space, a true learning partnership.”

The museum director realized that the next time a project like this one was launched, the museum must step in right from the start and be more active. Re-phrased in Wenger’s terminology, the museum must make provision for sufficient preliminary dialogue about the partnership’s new joint endeavor so as to avoid that either partner takes their collaborative practice for granted. This is what the director of Hammersby Museum also expressed when he said that it was best to “start from scratch” every time a new project was launched.

11.3 Summing up – Shoresby Gymnasium and Shoresby Museum
According to the four interview students and their teachers, this coursework was very successful. The students’ learning experiences did not “suffer” from the lack of collaboration between the teachers and the museum professionals. The teachers were satisfied because the students’ products lived up to the syllabus and curricular requirements of each subject. Furthermore, the teachers were pleased about having created a school-related point of intersection between students and their parents and that this social event took place at the museum where the students had worked.

Teachers and museum professionals alike noted that the students were motivated during the coursework and made an extra effort because they were preparing an oral presentation for an authentic audience. The students themselves understood how this was a strongly motivational factor. It was also clear that their learning experience was affected by the fact that their work was being assessed by their teachers and that their oral

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1 Wenger (2000), p. 226
2 See Skype conversation with Etienne Wenger, Fig. 8i, Appendix Chpt. 8, p. 23
3 See Oliver, Table 11.7, Appendix all Tables
4 Brad, Table 10.13, Appendix All Tables
presentations would be observed and assessed by their teachers as well as their parents. Being assessed by figures of authority is an everyday occurrence for students, so although some of them were nervous about the oral presentation, it was not unfamiliar nervousness.

Given the curriculum-related success of the coursework, it could be said that there is no need to develop the museum as a learning environment to be more than what it was for the Shoresby students, and consequently, partnership meetings (and partnerships) could be more or less done away with, saving time and money.

However, it could also be said that the students missed out on important learning experiences because of the weakened state of the partnership, a direct result of which was that the museum’s exhibits and objects were not incorporated into the coursework as necessary learning material on a par with the school-based learning resources. As Wenger put it, “the ones that didn’t work, they didn’t want to see the museum as a museum, they wanted to see it as another classroom.” If the teacher and museum professional in a partnership aspire to generate a learning environment similar to the one created for the Hammersby students, it is necessary for them to develop a “‘we’ process mode” where they meet and work as equals and share ownership of the joint enterprise and, importantly, “bringing their practice to the table” as equals.

Starting a new project off by spending time reconfirming and re-negotiating the partnership’s shared repertoire by telling stories about past projects (successes and failures) is a way of making it possible for newcomers to enter into and engage in the process. It also creates a platform for clarifying expectations in relation to the joint enterprise as well as to the project in question. Rounding the project off with an evaluation aimed at discussing the strengths and weaknesses of the collaboration and improving it for the next project is also a way of doing these things.

Similar to the students in the Shoresby case, the museum professionals and especially the teachers missed out on valuable learning experiences because of the way they entered into and carried out their collaboration. That does not mean to say that no learning occurred. It was clear from their responses in the interviews that both museum professionals and both teachers had identified some of the problems of the collaboration and considered how to avoid them in future collaborative projects.

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1 See Skype conversation with Etienne Wenger, Fig. 8i, Appendix Chpt. 8, p. 23
2 Hord’s Collaboration model, Fig. 8g, Appendix Chpt. 8
Chapter 12: Cranwell – Shoresby Museum

The learning outcomes of the two Cranwell classes, 3oc and 3oe, were remarkably different considering that the framework and content of the coursework were the same for both classes. In this way, the Cranwell case was similar to the Brigby case although in almost every other way the two cases are quite dissimilar: The Cranwell students were prepared for the coursework, which their teachers had developed in collaboration with the museum curator, they were at the museum for four hours plus time spent there doing coursework-related homework, their performance and products were assessed, they were required to produce products both for the museum and for school, and the coursework was directly relevant to and integrated in their lessons at school. The following analysis investigates what could have caused the difference in 3oc’s and 3oe’s recollected learning experiences.

12.1 Analysis Part 1 – Student learning outcomes

The two Cranwell classes had innovation as one of the subjects of their specialized study programs. In 3oc’s study program, innovation was taken at B-level (intermediate) in their second and third years of school, meaning that when they did this coursework, they had already had the subject for a little more than a year. In 3oe’s study program, innovation was taken at C-level (elementary) in their third year of school, meaning they had only had the subject for about seven weeks prior to this coursework. As the coursework and the products were the same for both classes, it seems likely that the students’ degree of familiarity with the subject’s concepts, methods and theories was a determining factor in how easy or difficult they found the coursework to do. This could be one explanation for the difference in how they remembered their learning experiences. However, there are other important factors that affected 3oe’s learning experiences negatively. These factors are especially interesting to investigate because they differ from those of the other cases and offer new insight into how coursework developed in line with the interface concept can be improved.

The four interview students in 3oe, Alice, Christa, John and Peter, were less than positive in their recollections of their learning experiences in relation to this coursework.

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1 See Cranwell, Appendix Partnership Introductions and Field Notes. See also Graph Prep, Appendix Common Graphs. 3oc and 3oe numbers are in the two columns at the right of the graph. 3oe numbers are very small because only six students answered both pre- and post-survey questionnaires.

2 The best video in each class would be uploaded to the museum’s website and used for dissemination purposes.

3 The products in question: The presentation of their video at the museum, and the video itself.
Regarding GLO 1 (Knowledge and understanding), all four students had difficulty connecting the concepts from this coursework with their new subject, innovation. Alice said that it would have been more relevant to do this coursework as part of their contemporary history lessons and Peter felt that he did not actually learn anything. In order to understand more fully the marked contrast between the two classes, it is necessary to look at the three responses to a few of the other GLO questions.

Alice and Christa were in the same group and their topic was the Telephone of the Future. They both felt they could have done the assignment without the museum and while they were there, they did not talk with anyone. They found information and images on YouTube and Google. They said that they also had trouble editing their video and John added that the students had not been given any information about how to edit videos, so some of the groups’ videos did not turn out very well. There was a conflict in John’s group which meant that he had decided to avoid working with a certain student in the future. John also said that the coursework had not been explained very well and that it was not until right towards the end of the coursework that they learned that they had to include something from their subject, innovation. Alice said that their assignment kept being changed and that the coursework itself was very vague and rambling. Peter thought it was a pity that they had not learned how to use their subject, innovation, in the coursework. However, he also said that he and John had to be innovative to play their parts in the videos and that they cut and edited them in a creative way. Alice had noticed that some of her classmates did not take the coursework very seriously and their videos did not have much subject-related content though it was easy to see that they had had fun making them. She followed this thought up by saying that students who liked dressing up and being entrepreneurial got something out of doing this coursework.

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1 Alice and Peter, Table 12.7, Appendix All Tables
2 Alice and Christa, Table 12.9, Appendix All Tables
3 Alice, Table 12.10, Appendix All Tables
4 Christa, Table 12.8, Appendix All Tables. Christa felt it was very frustrating to edit the video but said she and Alice had had fun at other times during their time at the museum.
5 John, Table 12.8, Appendix All Tables
6 Ibid.
7 John, Table 12.10, Appendix All Tables
8 Alice, Table 12.10, Appendix All Tables
9 Peter, Table 12.8, Appendix All Tables
10 Peter and John, Table 12.10, Appendix All Tables
11 Alice, Table 12.11, Appendix All Tables
Besides these recollections, some or all of the 3oe interview students, like their 3oc counterparts, did learn about telephony, and about learning, and that they could ask the people at the museum for help and that history becomes “concrete” at the museum. Like the students in all of the other cases, they enjoyed being given free rein to decide how to organize their work. Like most of the students in all of the cases, the four 3oe students thought it was fun to be at the museum.

If 3oe’s recollections are checked against the field notes,¹ we see that their visit to the museum was different than the other Cranwell class’ visit. They arrived at the museum an hour before they were supposed to, meaning that activities with other museum guests were underway in the Engine Hall, where they met briefly with Christian, the museum curator. This was the fifth day of visits from Cranwell students,² and Christian was busy with other activities that day so he did not interact very much with these students. Due to other business, Liz, their innovation teacher, was not always present at the museum while the students were there, which meant that the students were without supervision or support from either adult several times. Only one of the groups seemed to have a plan for their video; the others worked out the roles, the story line and dialogue, camera angle and setting on the spot. The Future group had been told they could find phones to take pictures of in the Lecture Hall, but it turned out that the Lecture Hall had been booked for another activity that day so they were asked to leave and work elsewhere. In other words, this class’ visit and work at the museum seemed less organized, less prepared and less supervised than 3oc’s.

The field notes furthermore present a picture of unruly, impolite students who did not respect Christian’s or their teacher’s authority or one other’s right to speak.³ We know from the students’ interview responses that some of the videos that were presented were not very successful and from Liz’ interview that two of the groups had not really done any work and had nothing to present.⁴

¹ 3oe Cranwell and Video Presentations Cranwell, Appendix Partnership Introductions and Field Notes, pp. 35-36
² Five classes of Cranwell students visited the museum during one week’s time. Some of the classes were there more than once and some of the groups visited outside of school hours to do coursework-related work.
³ Liz, Table 12.19, Appendix All Tables. The field notes reveal that there were also students in the other class, 3oc, whose behavior could be considered inappropriate for guests visiting a museum, e.g. eating one’s packed lunch in a museum exhibit and handling museum objects that were not part of their work.
⁴ Liz, Table 12.19, Appendix All Tables. The field notes reveal that there were also students in the other class, 3oc, whose behavior could be considered inappropriate for guests visiting a museum, e.g. eating one’s packed lunch in a museum exhibit and handling museum objects that were not part of their work.
On the basis of the students' interview responses and the field notes, a picture begins to emerge of two very different classes. Only six 3oe students felt motivated to answer the post-survey questionnaire, which might indicate that the rest of the students in that class were disappointed by the coursework and their results and did not want to be bothered about either any longer. 3oe’s teacher Liz’ interview answers give us another important perspective on the students and their learning experiences at the museum. According to Liz, 3oe was a weak class that had a poor reputation at school and that many of them lacked self-confidence and “felt like underachievers,” so the competitive element of the coursework had an adverse effect on some of the students’ motivation, especially the girls, who were quick to give up. She said that the boys saw opportunities at the museum while the girls only saw limitations and that both sexes would have gotten more out of the coursework if it had been more tightly planned and structured and if they had been given a few more guidelines. The best videos were actually the ones that did not fulfill the requirements regarding subject-related content because it was so difficult for the students to link innovation theory with the historical setting in a meaningful way. In other words, Liz more or less agreed with the interview students’ analysis of the coursework’s weaknesses.
When I asked her if she was satisfied with subject-related level of the coursework, she answered, “No, I am not. They [the students] have learned very little so far and many of them are probably at the same low level as when they started. But that has something to do with the class. I don’t think it has anything to do with the coursework but is more due to the students.”

Even though Liz did not know the class very well and was not with them at the museum very much, the unsatisfactory quality of their videos and presentations due to subject-related as well as technical issues convinced her that these students were not able to do the work. The students enjoyed the freedom of the coursework but Liz felt that many of them did not know how to respond to so much freedom and did not take the coursework seriously. This also tallied with what the interview students said and the downward trend from pre- to post-survey in the six students’ answers to the online questionnaires.

With all this in mind, it seems that the 3oe students were less capable and less mature than their 3oc counterparts and that the informal learning environment at the museum and created by this coursework matched 3oc’s agenda (motivation + strategies) better than 3oe’s. The motivation for both classes was more or less the same in that it was part of their syllabus in the subject innovation, but the strategies they employed to maneuver in the learning environment were not equally successful. Applying Falk’s and Dierking’s “Eight key factors” that influence learning to what we know about 3oe’s learning experience provides an approach to understanding why learning – or rather appropriate learning – was not generated.

As far as the first key factor under Personal context is concerned, Motivation and expectations, 3oe’s pre-survey responses indicate that 50% plus of the students had predominantly positive expectations regarding learning within GLO 1. In their interviews,

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1 Liz, Table 12.15, Appendix All Tables. The quote is a translation of a few of the lines in the interview transcript that were used to generate the table.
2 As their innovation teacher, Liz had known them for about seven weeks prior to their coursework at the museum.
3 Liz, Tables 12.14 and 12.19, Appendix All Tables
4 See the six students’ responses from pre- and post-surveys regarding GLO1 and GLO5 CranwellTotalA1-A7 and E1-E4, respectively. Appendix Chpt. 12. 3oe responses are on the right hand side of the graphs.
5 Fig. 7d, Appendix Chpt. 7
6 See the six 3oe students’ responses from pre- and post-surveys regarding GLO1 and GLO5, CranwellTotalA1-A7 and E1-E4, respectively. Appendix Chpt. 12. 3oe responses are on the right hand side of the graphs.
7 N.B.: Due to the very small number of 3oe students who answered both pre- and post-survey questionnaires (six students = 27% of the twenty-two students in the class), the quantitative data are inconclusive and are only used as an indication of a tendency in the class. Arguably, these six students
the students and Liz remarked that the break in the routine from school was very welcome; anticipating such a break in the routine might also account for the relatively positive responses within GLO1. Regarding the second key factor, Prior knowledge, we know from the field notes and the interview responses that the students had just started on the subject innovation so they were not practiced users of its concepts, methods and theories, which made the coursework challenging for them, more so than for 3oe. We also learned from Liz that 3oe students felt like “underachievers” and had low self-esteem. The third factor that influences learning within the Personal context is Choice and control. We know the students in both Cranwell classes enjoyed being given free rein in connection with how they made their videos. We also know that besides visiting the museum with their teachers, they were allowed to visit the museum whenever they wanted to during the week of the coursework, meaning that they were given a fair amount of control over when and how they worked. For 3oe, however, it seems that the mixture of shaky prior knowledge, low self-esteem and a large degree of self-determination proved deleterious for their learning experience. According to Ryan and Deci\(^1\) feelings of competence coupled with feelings of autonomy or self-determination foster intrinsic motivation, which, in turn, enhances learning. In the case of 3oe, one half of this equation – feelings of competence – seemed to have been lacking. Furthermore, the learning context must offer “optimal challenge”\(^2\) or “adequate stimulation”, meaning that the task set the student must match his or her capabilities, e.g. by enabling him or her to draw on previous knowledge. “…tasks that greatly exceed existing capacities will call forth… distress.”\(^3\) The four 3oe interview students described that they had felt frustration at not being able to manage technical and coursework-related issues. “Amotivation”, another concept introduced by Ryan and Deci, denotes “a state of lacking an intention to act”\(^4\) which is also descriptive of some of the 3oe students, who simply chose not to do the work.

\(^1\) Ryan (2000) p. 58
\(^2\) Ibid.
\(^3\) Deci (1985), p. 123. See also Hermansen (2003), pp. 69-70. Mads Hermansen claims that the best learning takes place in the student’s zone of proximal development, a concept he adopted from Lev Vygotsky’s theory.
\(^4\) Ryan (2000), p. 59; Deci and Ryan also point out that competition, like threats and deadlines, undermine intrinsic motivation.
Under the Sociocultural context, the key factor Facilitated mediation by others is especially relevant here. 3oe students worked quite a bit without supervision or support. This was no different for the other Cranwell class, 3oc, but as we have seen, the 3oe students were less sure of their competence and less motivated than 3oc, and this caused ineffectual learning behavior, which could likely have been rectified by closer and more frequent interaction with a teacher and / or a museum professional.

This brings us to one of the key factors that influence learning under the Physical context in Falk’s and Dierking’s model, namely Advance organizers and orientation. As Falk and Dierking point out, visitors, in this case students, are better able to construct learning if they know what to do and feel at ease and welcome at the museum. ¹ The museum had been crowded with students during the coursework week, and 3oe was the fifth and last class to visit the museum. They arrived an hour before the agreed upon time, which meant that Christian was busy with other things and was not there to greet them and only spoke with them briefly when he met with them a little later. Furthermore, their premature arrival collided with other activities at the museum. The class’ presence also conflicted with the museum’s plans later in the day when it was discovered that the Lecture Hall, where the students had been told they could assemble to work and take pictures, had been reserved for a book reception. The students picked up on the resultant ripples of dissatisfaction, which most likely added to their feeling of disorientation about the coursework.²

In answer to Research question #1,³ there are two significant findings in the above analysis. The 3oe students’ learning experiences were affected adversely 1) by the fact that in their planning of the coursework, the partners did not take into account that these students, compared to 3oc, were not sufficiently equipped to deal with the subject-related requirements of the coursework nor the freedom the informal setting at the museum provided nor the lack of adult supervision and support at the museum and 2) because their visit to the museum was not coordinated and communicated well enough between the teacher and the museum and between the management and staff members at the museum.

¹ Falk (2004), p. 142
² Alice and John, Table 12.10, Appendix All Tables
³ Research question #1: How are upper secondary school students’ learning outcomes affected by their participation in coursework in a museum learning environment and which has been developed and is implemented by teachers and museum professionals in partnership?
The next logical step is to investigate the teachers’ and museum professional’s recollections of what the students got out of the coursework in relation to how they perceived their collaboration.

12.2 Analysis Part 2 – Collaboration

Shoresby Museum’s director and Cranwell’s director agreed to enter into a trial interface partnership with a view to developing i.a. coursework for students attending the commercial branch of the Cranwell school. Christian and Liz became involved in the collaboration because their respective directors asked them to translate this idea into reality. A second teacher, Patty, joined after the first few partnership meetings.¹

Christian, Liz and Patty had positive recollections of their collaboration.² Christian was pleasantly surprised to discover Liz’ enthusiasm, as he had been worried that she might feel she was acting under orders from her director. He was pleased that Liz very quickly saw the potential of the museum in relation to the students’ curriculum and the syllabi of her subjects.³ Although Liz originally thought that this was not a “logical partnership” because it would more logical for a commercial school to be in a partnership with a business, she had positive expectations about working with the museum, which were not disappointed.⁴

Christian and Liz were responsible for by far most of the coursework’s planning and organization. Originally they planned for it to be a pilot experiment with only her class involved but when Patty and the two other teachers asked to join, its implementation at the museum was re-organized so everyone could participate. Of the three teachers that joined later, Patty was actively involved in the final stages of planning and organizing the coursework.

In Wengerian terminology, the collaboration started with initial boundary encounters that can be characterized as a cross between one-on-one encounters and immersive encounters in that Liz and Christian took turns visiting each other’s institution. Considering that their collaboration was at first only meant to involve the two of them, this was a sensible way of becoming acquainted with each other’s work and work places and acquiring concrete experiences on which to base their initial negotiations about the frame

¹ Two other teachers joined the project after it had been planned by Christian and Liz and, to a certain extent, Patty. I was involved in an advisory capacity in the first few meetings but when Patty joined the collaboration, I became an observer only. See Appendix Partnership Introductions and Field Notes, p. 33.
² Christian, Liz and Patty, Table 12.13, Appendix All Tables
³ Christian, Table 12.13, Appendix All Tables
⁴ Liz, Table 12.13, Appendix All Tables
and content of their mutual engagement. It was also a way of underlining that they were newcomers in each other’s community of practice and thus equals. When Patty became involved, she was a “new” newcomer, but the budding boundary practice had as yet not developed such a complex shared repertoire that a trajectory into it was difficult. However, as Patty pointed out in her interview, she was happy to have participated in a few of the planning meetings as it enabled her to feel a sense of ownership of the joint enterprise.¹ In her interview, she said, “It is pretty difficult to feel a sense of ownership for coursework that you’ve learned about in an e-mail … I was happy that I got to participate … that was really good for me.”²

The partners behaved as true “learning partners”³ who brought their competences “to the table.”⁴ Their negotiations were characterized by openness and curiosity. For Christian it was important that history and the museum featured as integral parts of the coursework and he was pleased to note that during their meetings Liz and Patty got new ideas about how to link history to innovation and other subjects. Liz and Patty, on the other hand, saw both the collaboration and the coursework as innovative, e.g. they were developing completely new coursework that would involve using the museum actively instead of passively. Their negotiations were reified in time-tables, a project description, product requirements, teaching material comprised of texts about both innovation and history in connection with telephony and Christian’s lecture at the school for all five classes.

It was in its execution at the museum that the collaboration’s joint enterprise ran into trouble. This was partly due to the fact that the coursework was the same for all five classes which, as we have seen, 3oe did not seem sufficiently equipped to deal with. It was also due to unclear communication between the partners on the day of 3oe’s visit regarding their arrival and supervision as well as unclear in-house communication about and coordination of the coursework at the museum, where it seemed that handling 150 students⁵ in the space of one week caused some turmoil and grumbling.⁶ According to Christian, the most serious threat to the success of the coursework and ultimately the partnership’s collaboration was gearing the museum towards mass visits of this sort, i.e. getting all the staff members

¹ Patty, Table 12.13, Appendix All Tables  
² Patty, Table 12.14. The quote is a translation of a few of the lines in the interview transcript that were used to generate the table.  
³ Skype conversation with Etienne Wenger, Fig. 8i, Appendix Chpt. 8, p. 23  
⁴ Ibid.  
⁵ E.g. providing them with historical costumes to wear, finding telephones and other objects for them to use in their videos and accommodating them in the Workers’ apartments and other exhibits  
⁶ Christian, Table 12.13, Appendix All Tables
behind the effort. He said, “The question is how to coordinate [such a visit] and how to get everyone in the organization to feel that it is a priority…We [at management level] think that it is important, but what about further down in the organization, where they … basically don’t have to bother about which project is the most important. For them it is a question of how much hassle and confusion it causes. And a project like this causes a lot of hassle.” He concluded that greater effort would be made in the future to make even clearer for all the museum staff that this was a priority activity.

Returning once again to Wenger’s terminology, within the community of practice at the museum it was necessary to establish a joint enterprise regarding e.g. the prioritization of museum activities based on negotiations between museum management and museum rank and file, where accountability for a new Cranwell project’s success became a mutual effort founded on appropriate local or in-house response.

Between the partners, however, in the course of the planning meetings and during the coursework week, a boundary practice was formed and it was the shared repertoire of this practice that was interpreted and re-negotiated in the evaluation meeting that took place some weeks after the coursework was completed. The field notes reveal that many of the problems pointed out in the analysis of this case were dealt with at the meeting, e.g. it was decided that there would be separate product requirements for the video and the presentation and that the students would still be allowed to borrow clothes from the Wardrobe but would have to make an appointment to do so first. Furthermore, Christian pointed out that it would be best to spread the visits out across a longer period of time if the next project involved as many students. So in answer to Research Question #2, it is clear that though their collaboration and the implementation of the coursework that they developed together, both teachers and Christian learned about their own and each other’s practices.

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1 Christian, Table 12.13, Appendix All Tables. The quote is a translation of a few of the lines in the interview transcript that were used to generate the table.
2 See Cranwell, Partnership evaluation meeting, Appendix Partnership Introductions and Field Notes, p. 38.
3 See no. 6, Cranwell, Partnership evaluation meeting, Appendix Partnership Introductions and Field Notes, p. 39.
4 See no. 4, ibid.
5 Research question #2: How are the teachers’ and museums professionals’ understanding of their own and their partner’s communities of practice affected by their collaboration to develop and carry out coursework for students in a museum learning environment?
12.3 Summing up – Cranwell and Shoresby Museum

According to 3oc’s interview answers and their online responses, their learning experiences were positive within all five GLOs. Patty was pleased with their performance although she was aware of the fact that not all of them had understood how to include subject-related theory in their videos. Liz, on the other hand, was not happy with her students’ performance and she felt that they had learned very little, which she ascribed to their poor self-esteem, their lack of initiative and their general low level of academic attainment.

Christian said that he and the teachers felt that a certain degree of playfulness in the coursework was desirable,¹ which motivated 3oc students to creative thinking but which seemed to have the opposite effect on some 3oe students, e.g. those who simply gave up and did not produce anything or those who were rude and disruptive during the presentations.

The Cranwell partnership negotiated a new way forward for the next coursework on the basis of an evaluation of the coursework they had just completed. The evaluation meeting focused on hammering out practical, manageable solutions to various problems they had encountered during the coursework. Although the problems they discussed seemed fairly concrete, they interfaced with much larger and more complex issues such as inadequate in-house communication and coordination at the museum, unsatisfactory student output, unproductive and aimless student activity, lack of student supervision and support at the museum and, importantly, not planning and organizing how to make it possible for an academically weak class low on self-confidence to have a successful learning experience like that experienced by the 3oc students. These issues were not explicitly addressed at the evaluation meeting, but were indirectly dealt with in the discussion leading up to the formulation of aforementioned solutions.²

At the evaluation meeting, the two teachers who had only been involved peripherally in the collaboration were present. To a certain extent, they could be considered newcomers at a partnership meeting. Their trajectories into this boundary practice were facilitated by the three old-timers, Liz, Christian and Patty, who shared stories and broached topics for discussion of which the two newcomers had some knowledge through their peripheral participation in the coursework (with their students) and therefore could contribute to the

¹ Christian, Table 12.14, Appendix All Tables
² See Adjustments nos. 1 to 6, “Partnership evaluation meeting”, Cranwell, Appendix Partnership Introductions and Field Notes, p. 39.
discussion with some degree of legitimacy and competence. One of the unspoken points on the agenda seemed to be about strengthening the partnership’s collaborative practice by boosting the attraction of belonging to it and contributing to its success. In that context, discussing e.g. the failure of a group of students in one class to live up to the success of the others could be perceived as counter-productive.

Both teachers and Christian pointed out in their interviews that the success of the collaboration is dependent on the interest and enthusiasm of the individuals in each organization. The analysis of the 3oe’s learning experiences indicates that the partnership’s success could be measured against the interest and enthusiasm of the students as well.
Chapter 13: Westby Gymnasium & HF – Westby Museum

The Westby students were very motivated to work with their elective subject, A-level Chemistry. They were 3rd year students who had been in the same class all three years so they knew each other well. There are no field notes for this case and very few online responses. However, of the eight students taking this elective, seven of them answered both surveys, which, compared to e.g. 3oe at Cranwell, constituted a very high percentage of answers.

The Westby case is special because although the coursework planned by the Westby students’ chemistry teacher in collaboration with the museum educator was a great success as far as curriculum- and subject-related learning outcomes were concerned, the partnership between the school and the museum seemed only to have been active for that one collaboration. So unless the coursework has been downloaded and used or booked by other schools since then, the investment of time and effort by both institutions in this interface partnership was limited to one class of eight students.

13.1 Analysis Part 1 – Student learning outcomes

Jerry, Linda, Matthew and Naomi came across as motivated, ambitious students in their 3rd and final year of school, who understood that the coursework “Soil Analysis” had given them an opportunity to do something above and beyond what an ordinary Chemistry A-level class would do. Their responses during the interview not only revealed that they felt that they had learned a great deal within all five GLOs but also that they were proud and grateful to have been involved in this coursework and proud of their results.

A selection of the pre- and post-survey responses indicated that the class was optimistic about what they would learn and that these expectations were not disappointed. All seven students both expected and experienced an increase in their understanding of how the subject could be applied in practice. Six of the seven students both expected and experienced that they would gain insight into how museum objects can be used to create knowledge. A slightly more marked change was indicated when five students (compared to three on the pre-survey) experienced that they had become more confident when

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1 As part of this coursework, the students were given samples of the museum’s phosphorus tests including soil samples, and their task was to repeat a series of tests to see if the techniques that had been used earlier and the subsequent test results were scientifically valid, see Westby, Appendix Partnership Introductions and Field Notes
2 Graph Westby3xA3, Appendix Chpt. 13
3 Graph Westby3xA4, Appendix Chpt. 13
explaining subject-matter orally. This corresponded to what the interview students mentioned about learning how to tell 7th graders about science and about their project at the Science Fair. Five of the post-survey responses compared to three pre-survey responses indicated that the students had become more likely to visit the museum for schoolwork after doing this coursework, which matched the interview students’ responses. There were five students who indicated on both the pre- and post-survey questionnaires that they were either not very likely or would not at all visit the museum in their spare time. Again, this corresponded to what the interview students said. It is not surprising that the online survey answers were very similar to the interview students’ responses, considering that at least three of the interview students were among the seven that responded (out of eight students in all) and would therefore have influenced the total number of answers significantly.

The students as well as Nash, their teacher, and the museum educator, Angelina, pointed out that the class had learned about how chemistry can be used, e.g. in archaeology, about scientific method and procedure, about history through chemistry and about chemistry through history, about communicating their procedure and results in writing and orally, about getting practice and being meticulous in the laboratory and about the advantages of working together in that context. So the services rendered by the museum were effective; especially the fact that the museum was genuinely interested in the students’ laboratory results motivated them to remain focused and adhere to sound laboratory procedures and practice during their laboratory work. Asking the students to run new tests on the soil samples to confirm or disconfirm the museum’s own results lived up to the dialogical principle of asking the students authentic questions, as was done in both classes of the Hammersby case. The Westby students, like their Hammersby counterparts, were intrinsically motivated, and according to their teacher’s description of their behavior while they were working in the laboratory, they were motivated to such a degree that it is relevant to mention Mihaly Csikszentmihalyi’s theory of flow.

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1 Graph Westby3xB2, Appendix Chpt. 13
2 Jerry and Matthew, Table 13.2, Appendix All Tables
3 Graph Westby3xE3, Appendix Chpt. 13
4 Jerry, Linda, Matthew and Linda, Table 13.3, Appendix All Tables
5 Graph Westby3xE4, Appendix Chpt. 13
6 Jerry, Linda, Matthew and Linda, Table 13.3, Appendix All Tables
7 Nash involved the students in the process of writing guidelines for the experiment, Table 13.2, Appendix All Tables.
8 Tables 13.1, 13.2, 13.10, 13.12, Appendix All Tables
learners are in a state of “flow”, they are completely involved, focused and concentrated on the learning activity. They have a sense of inner clarity, know what to do and can judge how well things are progressing. There is a match between their skills and the task they have been set, so they feel capable and calm and do not notice the passage of time.\footnote{In the students’ laboratory tests, time was an important factor. “Time” in relation to the state of flow is the time one “forgets” or “loses sense of” because one is absorbed in doing the activities or carrying out the tasks at hand. The time factor in the laboratory tests could be said to have heightened the students’ feeling of flow as the work brought them out of themselves and into close, collaborative contact with their classmates.}

Intrinsic motivation is at its maximum level and the learners’ activities and the results of the activities are their own reward.\footnote{Csikszentmihalyi (2004), 14.06 minutes into his talk} Nash described how excited the students had been about working with soil samples taken from historic sites and containing traces – which they were able to find – of the Iron Age.\footnote{Nash, Table 13.11, Appendix All Tables} His description of their collaboration in the laboratory also indicated that the students stepped outside of personal agendas and entered into a collaborative spirit, coordinating their findings and helping each other and getting to know each other even better in the process.\footnote{Nash, Table 13.10, Appendix All Tables} Angelina reported that Nash told her that the students had been completely absorbed in their laboratory work and had gone to great lengths to do it meticulously.\footnote{Angelina, Table 13.11, Appendix All Tables} The interview students’ recollections of their learning experience in the laboratory corroborated Nash’s observations. Jerry’s description of what it was like working in the laboratory suggested that time there flew for him: “I can compare it with computer games … you’re having fun and are stimulated and it has caught and keeps your attention. And you can work longer.”\footnote{Jerry, Table 13.3, Appendix All Tables. The quote is a translation of a few of the lines in the interview transcript that were used to generate the table.} Naomi said she learned something new every day and she and Matthew were so absorbed by the laboratory tests and work that they did not want to miss a single lesson.\footnote{Matthew and Naomi, Table 13.3, Appendix All Tables}

According to psychologist Dr. Mihaly Csikszentmihaly, there are three conditions that must be met before a flow experience can be produced: “clear goals, optimal challenges, and clear, immediate feedback.”\footnote{Csikszentmihalyi (2007), p. 602} The conditions for a flow experience were optimal for the 3x students. They were working to a clear-cut set of goals so they could concentrate on the process leading up to the goals instead of worrying about the goals themselves. They had worked with chemistry for three years and felt well-prepared to meet the challenge of the
laboratory work necessary to carry out the soil sample tests, and they received frequent feedback from their teacher, Nash, and later Angelina.

In answer to Research Question #1, the Westby chemistry students’ learning was clearly and positively affected by their participation in coursework that involved using the museum as a learning resource, coursework which had been developed by their teacher and the museum educator. They felt honored and proud that the museum entrusted them with the soil samples and, more importantly, needed and would actually use their laboratory test results.

13.2 Analysis Part 2 – Collaboration

In contrast to the Brigby and Shoresby cases and similar to the Cranwell case, the Westby partnership was new. In Wengerian terms, Angelina and Nash were both newcomers to the collaboration, meaning that there were no paradigmatic trajectories or previously established artifacts, tools, discourses or concepts to take into consideration in the development of their boundary practice; e.g. they did not have expectations about each other based on prior collaboration which could become disappointed. As contributing partners they were equal as far as professional legitimacy and collaborative competence were concerned. They agreed to the distribution of responsibility and were open and clear about what each partner would gain from the collaboration. This latter point was the factor that ensured that the relationship remained non-hierarchical, which is one of the characteristics of King’s “strategic alliance”\(^1\), although in most other respects, the collaboration between Nash and Angelina was more along the lines of Larsen’s “Facilitation”\(^2\), where the museum and the school help each other but adhere to their own institutional culture.

Nash’s and Angelina’s collaboration was “traditional” in the sense that the museum’s role in the partnership was that of a service provider, in much the same way as the museums of the Brigby and Shoresby partnerships. Angelina described the role of the museum as being an extra classroom for the students.\(^3\) She explained in her interview that the museum serviced Nash by finding suitable research material and objects\(^4\) for his

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\(^1\) King (1998B), p. 7. See Fig. 8e, Appendix Chpt. 8
\(^2\) Fig. 8f, Appendix Chpt. 8
\(^3\) Angelina, Table 13.8, Appendix All Tables. It is important to remember that Angelina met separately with teachers from three different schools to plan coursework. In relation to the coursework planned with Westby Center School, the role of the museum was also to be an extra classroom.
\(^4\) Angelina, Table 13.7, Appendix All Tables
students’ laboratory work. She marshaled an archaeologist from the museum to give the students and Nash a lecture and a guided tour. Unlike Tammy, the museum educator at Brigby Art Museum, Angelina did not participate actively in the coursework itself but remained a passive onlooker during the students’ visit at the museum.

It is clear from Nash’s and Angelina’s interview responses that the students’ learning outcomes within all five GLOs lived up to the curriculum- and subject-related objectives of the coursework. Angelina’s description of the students’ learning outcomes corresponded closely to her description of the learning objectives she had intended for this coursework; her experience of the students’ learning was based on her observations of them during their visit to the museum. It their interview responses Nash and especially Angelina were quite articulate about the objectives of their collaboration and the coursework. Right from the beginning, they wanted to create curriculum- and syllabus-related coursework for the students that fulfilled the formal requirements and learning objectives of A-level chemistry. Nash’s strategy was to give the students an extraordinary and challenging learning experience as part of their A-level elective and in his interview he emphasized the museum’s input contributed to make science more appealing by adding an archaeological and historical angle.¹

Angelina’s strategy was slightly different. Like Tammy, the museum educator in the Brigby case, Anglina’s ambition was to create an off-the-shelf museum product that could be booked by / sold to other schools. It was of paramount importance to her that the coursework was organized in modules and in great detail so that other teachers at other schools could easily book the whole package or one or two modules of the coursework.² Like the other 1st year partnerships that started that year, Westby Museum received funding through intrface³ and Angelina’s and the museum’s strategy was to invest the extra resources provided by the funding in developing coursework that other schools would also be interested in booking. According to Angelina, without funding, collaboration of this kind would not have been possible.⁴

Angelina’s and Nash’s interview responses indicated that they worked well together. However, Nash expressed some regret that the students’ visit to the museum ended up

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¹ Nash, Table 13.7, Appendix All Tables
² Ibid. Oddly, there is no mention of this coursework on Westby Museum’s website, or on Coastal Museum’s website. (Both websites accessed July 1, 2014)
³ The manager of intrface applied for and was allotted funds from the Danish Agency for Culture for the museum’s first year of partnership collaboration.
⁴ Angelina, Table 13.7, Appendix All Tables
being too traditional and “one-way”; in his opinion, future museum visits in connection with coursework of this kind should involve and activate the students more.\textsuperscript{1} He intended to discuss this with Angelina when they evaluated their collaboration and the coursework.\textsuperscript{2}

Despite their fruitful collaboration and despite the fact that they both had the support of management at their respective institutions, their collaboration did not develop into a lasting collaborative practice. No significant shared repertoire was established and the partnership was not expanded to include others at the school or the museum. Nash’s and Angelina’s boundary crossing was of the one-on-one type, meaning that whatever they learned about each other was limited to their mutual engagement, and the way the coursework was organized meant that no one else at either school or museum was invited to participate. E.g. the archaeologist at the museum was not included in the planning of the coursework and his contribution to it was that of an expert called in to infuse the students with his knowledge.

Regarding Research Question #2, Nash and Angelina did not work towards learning about each other’s communities of practice or towards establishing a vigorous collaborative practice at the boundary between their practices. Their priority was developing coursework for Nash’s class and, ideally, for other teachers and museums who might be interested in using it. In this endeavor their collaboration succeeded.

13.3 Summing up – Westby Gymnasium & HF and Westby Museum

Nash’s A-level chemistry students learned a great deal about chemistry from doing this coursework. The historical and archaeological angle of the archaeologist’s contribution broadened and enhanced their understanding of the subject, and the transformation of normal chemistry laboratory experiments executed according to schoolbook guidelines and for the teacher’s eyes only into laboratory testing and procedure framed and assessed in an authentic context stimulated them to an unprecedented level of engagement, concentration, collaboration and hard work.

A description of the coursework has been uploaded onto the interface website but it is not available in modules. It is not available on the museum’s and the school’s websites.\textsuperscript{3} In that respect, the resources spent on realizing the museum’s ambition to develop such coursework have not yielded the hoped-for result.

\textsuperscript{1} Nash, Table 13.7, Appendix All Tables
\textsuperscript{2} Ibid.
\textsuperscript{3} Both websites accessed July 1, 2014.
Future-proofing the partnership by investing resources on boundary brokering activities carried out by Nash and Angelina – and the museum’s archaeologist – for other staff members from both institutions would be a way of informing others about the coursework and its success and the collaboration leading up to it and inviting them to join the joint enterprise and contribute to its development, e.g. by developing coursework for other subjects and larger numbers of students. This process would also contribute to a strengthening of Angelina’s and Nash’s relationship as they would need to evaluate and analyze their own collaboration and its results in order to perform as boundary brokers in such a context.

Westby museum’s potential as a learning resource was exploited directly and successfully. However, as a learning environment, it was exploited far less. As we have learned, the role of the museum in this coursework was defined as being an extra classroom for the students, i.e. it was used as an extension of the students’ normal formal learning environment. The potential of the museum as an informal learning environment was not tapped into, which Nash subsequently realized and regretted.

Conclusions: Section III
The analysis of the qualitative data that were collected through the group interviews with the students did not result in definitive, fixed conclusions about their learning outcomes but rather in informed perceptions that reflected the complexity and multi-faceted nature of these outcomes. The GLOs were illustrative to use in the analysis of how the students of these five cases recollected and described their learning and furthermore in the analysis of their teachers’ and the museum professionals’ observations. The Wengerian concept of learning as an aspect of social practice was reflected in the students’ remembered learning experiences. The analysis showed that the students’ participation in the various social contexts they encountered while doing the coursework resulted in significant learning about and from: Working in groups, interacting and communicating with their teachers, the museum professionals and in some cases, many other adults, observing their teachers’ interaction with the museum professionals and presenting and communicating their products to authentic audiences other than their teachers.

The analysis of the partnerships’ collaboration, again based on qualitative data, delineates a similarly complex topography of learning experiences. By collaborating with professionals from a different community of practice, many of the teachers and museum
professionals in these five cases not only learned about their partners’ community of practice but also learned about their own.
Section IV Conclusion of the dissertation

1. Purpose and contributions of the dissertation

1.1 Purpose of the dissertation
The purpose of this dissertation was to investigate and analyze the learning that takes place in *intrface* coursework and collaboration. *intrface* is an association of upper secondary schools and local museums in Denmark, who work in partnership to develop and carry out school-related, museum-based coursework for students. The research focused on the learning that the students experienced in the interface of the two learning environments: The formal learning environment of the upper secondary school and the informal learning environment of the museum. Focus was also on the learning that the teachers and museum professionals experienced as a result of their collaboration. The purpose was furthermore to demonstrate if and how the partnership’s collaboration affected the students’ learning experiences when they were doing the coursework. An ambition of the dissertation is to present findings that museum-school partnerships can use in order to develop the potential of the learning environment that is created in the interface between the school and museum.

1.2 The dissertation’s contributions to research and practice
The knowledge generated by this research is useful for upper secondary school teachers, museum professionals as well as management at both institutions. It can be put to strategic use to create new goals for museum and upper secondary school collaboration.

An important contribution of the dissertation is the research findings regarding the learning experiences of upper secondary school students doing school-related coursework in a museum learning environment. Although young people’s use and non-use of museums has been the topic of several reports and surveys in Denmark,¹ only a few researchers have done research on upper secondary school students’ learning in museums². Through my research, knowledge was generated about how these students perceived museums as a setting for learning. The research findings revealed how the teachers and the museum professionals viewed the students’ learning experiences while they were at the museum.

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² Bøje (2005), Andreasen (2008) and Quistgaard (2010A, 2010B) and Dysthe (2013)
This knowledge is useful for both museums professionals and teachers who want to develop the pedagogical and didactic potential of museum-school coursework.

The Generic Learning Outcomes (GLOs) were used as the main method of gathering and analyzing both qualitative and quantitative data about these learning experiences. This analytical approach has not been applied for PhD-level research in Denmark before; the analysis of the GLOs (Chapter 7) coupled with the experience of using them for this research contributes to the growing body of knowledge about the GLOs in Scandinavia.

Another contribution is the research findings concerning the collaboration of museums and upper secondary schools working in *interface* partnerships. With the exception of Bøje’s evaluation of the project Contemporary Art and Young People, little research has been done on long-term museum-upper secondary school collaborations in Denmark. American learning theorist Etienne Wenger’s community of practice (CoP) theory was applied as the main analytical tool for this analysis. This coupled with the analysis of Wenger’s theory (Chapter 8) generated useful knowledge about the strengths and limitations of CoP theory as an analytical approach in research on museum and school collaboration. Americans Michelle Phillips and James Kisiel employed Wenger’s CoP theory as a framework for gathering and analyzing information about collaboration between museums and institutions of formal education. Wenger’s theory and models could be adapted and used by *interface* and other partnerships to analyze and verbalize their own practice.

This dissertation carves out a space for itself on the basis of its findings regarding how the collaboration of museum professionals and upper secondary school teachers affected the learning experiences of the students who were doing the coursework they had developed together. It has not been possible to find other research that presents findings similar to these. These findings can be used by museum-school partnerships to develop their partnership’s practice and the potential of joining the learning environments of the museum and school.

In a Danish research context, a final important contribution of the dissertation has to do with the complementarity of formal and informal learning environments, which

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4. Phillips (2006) Phillips’ and later Kisiel’s is the only research I have been able to find that uses Wenger’s theory in this way.
5. Kisiel (2014)
emerged through the analysis of the students’ learning experiences and of the teachers’ and museum professionals’ collaboration. This complementarity is further established in the analysis of the political and institutional background of the GLOs (Chapter 7), which revealed that the terminology associated with informal learning outcomes has become widespread in literature pertaining to institutions of formal education, signaling a shift in how the learner is perceived and a “drawing near” of the two types of institution. This knowledge can be put to strategic use by museums and schools who are interested in developing the educational theory and practice of their institution. In continuation of this, the analysis of the many educational-political and cultural-political changes upper secondary schools and museums have experienced since 2005 (Chapter 5) contextualized interface and why this type of project was met with favorable response by both educational and cultural funding agencies. This knowledge can be used strategically by both museums and upper secondary schools when applying for funding for similar projects and when designing new collaborations with partners.

2. Regarding the research questions

The research questions have been answered.

Research Question #1: How are upper secondary school students’ learning outcomes affected by their participation in coursework in a museum learning environment and which has been developed and is implemented by teachers and museum professionals in partnership?

The research findings reveal that the students’ participation in coursework in a museum learning environment resulted in learning outcomes within most or all five GLOs. These findings were corroborated by the teachers’ and museum professionals’ recollections of the students’ learning.

The pre-survey questionnaires asked the students GLO-based questions about what they expected to learn from doing the coursework at the museum; the post-survey questionnaire asked the same questions, in the past tense. The shift in student response from pre- to post-survey also demonstrated that participating in this coursework at the museum was a learning experience for them.

Comparing the analyses across the cases and, as in the Brigby case, across the two Brigby classes, illustrated that there were significant differences in how the students recollected their learning outcomes. When these differences were checked against the findings generated by the analysis of the teachers’ and museum professionals’ collaboration,
it became clear that students’ learning outcomes were affected by their participation in coursework that had been developed and was carried out by their teachers and the museum professionals in partnership. The research findings also revealed that the students noticed and were affected by how their teachers and the museum professionals worked together. Key findings regarding the students’ learning are related below.

**Research Question #2:** How are the teachers’ and museums professionals’ understanding of their own and their partner’s communities of practice affected by their collaboration to develop and carry out coursework for students in a museum learning environment?

In four out of five cases, the research findings demonstrated that the teachers’ and museum professionals’ understanding of their own and their partner’s community of practice was affected by this collaboration. In the fifth case, the Brigby case, there was no collaboration between the teachers and the museum professional. Consequently, they had learned very little about the other’s community of practice. The research findings demonstrated that by identifying and reflecting on the convergence of their practices, the individual partner became aware of differences and similarities between them and gained a new perspective on his or her own practice by experiencing it from the perspective of his or her partner. This was especially clear in the Hammersby and Shoresby cases.

3. **Research design and method**

3.1 **Research design**

There are two questions to answer regarding research design: Did the research fit the design? Did the interpretative approach and the emphasis on qualitative data as the primary source for analysis and interpretation ensure valid, reliable analytical findings?

The close adherence to American sociology professor Sharlene Nagy Hesse-Biber’s mixed methods research design\(^1\) ensured that the research project was anchored to relevant theory, was consistent in its approach and observed correct scientific practice. It also provided a route for the analytical work to follow. The theoretical and analytical approach of this study is rooted in constructivism and social constructivism, which is part of the same ontological and epistemological framework as the interpretative approach, as Hesse-Biber recommends. The theories underlying the GLOs and Wenger’s theory also belong to this framework.

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\(^1\) Hesse-Biber (2010)
The complexity of this research made using qualitative data as the primary source for
analysis and interpretation and quantitative data to assist in this process an obvious course
of action. Interviewing the teachers, museum professionals and students generated data
which ultimately provided deeper, more detailed insight into the dynamics of both the
students’ learning experiences and the partnerships’ collaboration than ticked responses on
a survey would. There were forty-nine interviewees in all: twenty-nine students, twelve
teachers and eight museum professionals distributed among five case studies. The
qualitative data were supplemented by field notes and photographs from my observations
of students at the museum and teachers’ meetings. These field notes as well as
introductions to each partnership are in the appendices of the dissertation and are used as
supplementary material to throw light on different aspects of the analyses of the cases.

The choice to gather quantitative data by means of the pre- and post-surveys was
motivated by the desire to learn about how students expected their learning outcomes at
the museum would be in relation to how they actually remembered the learning experience
afterwards. What was learned from these data was used in relation to assist in the analysis
and interpretation of the qualitative data.

A more pragmatic reason for assigning the quantitative data a secondary or
supplementary role in the analytical process was that the sample size of quantitative data
was very small; only eighty students across the five cases answered both pre- and post-
surveys and the distribution of the answers was very uneven, i.e. in one class almost all
students answered both surveys and in another class twenty-two answered the pre-survey
and only six answered the post-survey. In spite of the small sample size, the quantitative
data were useful as indicators of the students’ expected or remembered learning within
each GLO and were used as such in relation to the qualitative data. Using the qualitative
and quantitative data in this way produced reliable, valid findings. As the research design
and process were transparent, the research could be repeated by others.

Regarding my role as a researcher, my background as an upper secondary school
teacher meant that I was more familiar with the lived experiences of students and especially
of teachers than of museum professionals. In relation to the data-gathering stage of the
research, this factor was unimportant as the interview guides for museum professionals and
teachers were the same, thus ensuring consistency in my approach. In relation to the
interpretation of the analytical findings, possible biases and pre-conceived notions were
offset by using the GLOs and Wenger’s theory as analytical tools: they added balance to
the equation in that the GLOs measure the learning impact of museums and Wenger’s theory is not anchored to any one profession. Many of the additional theoretical perspectives were also linked to museums or collaborations between museums and schools.

It stands to reason, however, that as an upper secondary school teacher I have a professional interest in learning and educational theory and practice. This professional interest fed the ambition of the research to identify and understand the learning that takes place in connection with _interface_ coursework. Because this coursework is developed and carried out by upper secondary school teachers and museum professionals in partnership, it was also necessary to analyze their collaboration so as to discover if and how their collaboration affected the students’ learning. In other words, my professional interests influenced the focus of the study and ultimately the findings.

### 3.2. Method – the GLOs and Wenger’s Community of practice theory

Using the GLOs and Wenger as tools to analyze the data is a way of introducing objective measuring and interpretative devices into the research process. In the analysis of the students’ learning and of the collaboration of the partners, where were the GLOs and Wenger’s CoP theory especially effective to use as analytical methods and, conversely, where did they fall short?

#### 3.2.1 The GLOs

As a means of gathering data about the students’ coursework learning outcomes, the GLOs and their associated sub-categories proved useful. They were used as the basis for the content of the questions on pre- and post-survey questionnaires, and for many of the questions on the two interview guides (one for the students, one for the adults). Assigning one unit of meaning per question was the most obvious challenge, which also presented itself when the interview transcripts were coded; the fact that it was difficult reflects how complicated it is to talk about and later analyze the learning process. Double and sometimes triple-coding of the interview data was unavoidable, which would have skewed a count of the how many statements there were per GLO. As a result, I chose not to quantify the answers coded with the GLOs in the qualitative data.

Because only eighty of the students answered both pre- and post-survey questionnaires, the sample size of the quantitative data was very small. Therefore the quantitative data were interpreted as being an indication of the students’ expectations and experiences of their coursework learning outcomes, and used to supplement the qualitative findings.
In the analysis of the data, the GLOs were useful because they provided a uniform structure and terminology to use in all cases when analyzing and writing about students’ recollections of their learning experiences – and their teachers’ and the museum professionals’ recollections of the students’ learning experiences – within each of the five GLOs, which also eased cross-case comparison. The GLOs fell short, however, when it was necessary to look more closely at important aspects of learning, e.g. motivation, prior knowledge, agenda and socially mediated learning. Then other learning theory and models were applied, i.a. American learning theorists Falk’s and Dierking’s Contextual Model of Learning and the eight key factors that influence learning,¹ and Wenger’s communities of practice theory. Falk’s and Dierking’s model contextualizes learning in museums within the personal, the physical and the sociocultural contexts, and learning is seen as being experiential, built on prior knowledge, and socially facilitated and mediated. The model provides a framework for explaining and understanding learning in an informal learning environment and using it strengthened the analysis of the students’ learning at the museum.

3.2.2 Wenger’s Community of practice theory

Wenger’s CoP theory proved effective to use as a method to analyze and interpret the dynamics of the teachers’ and museum professionals’ collaboration. It was useful to understand teachers as belonging to one CoP and museum professional(s) as belonging to another and use Wenger’s concepts - such as mutual engagement, joint enterprise and shared repertoire, boundary crossing, brokering and artifacts, trajectories and negotiation of meaning – to identify and analyze their collaborative activities across the boundary between the two communities.

Wenger’s terminology was used in the analysis of the collaboration of each partnership, and this facilitated comparison across the cases. Other theories about partnership collaboration were applied as a way of going into depth with certain aspects of it, i.a. American sociologist Michelle Phillips’ concepts of genuine collaborations and cooperatives or American education theorist Shirley M. Hord’s models of collaboration and cooperation.

Wenger’s CoP theory was also effective to use in relation to the analysis of the students’ learning experiences at the museum as they too crossed the boundary between the classroom CoP to the museum setting as a new CoP.

¹ See Figs. 7c and 7d, Appendix Chpt. 7.
4. Key findings in case analyses

The coursework carried out by the Brigby partnership resembled a typical museum-school contact, where a teacher books a short educational program at a museum for his or her class and the museum educator is in charge of the students’ learning activities while they are at the museum. This made the Brigby case interesting to analyze and compare with the other four cases, which were organized and functioned according to the interface concept of collaboration between the partners and their joint development and deliverance of the coursework.

4.1 Conclusions regarding students’ learning

The analysis of the Brigby case showed that there were significant differences between the learning outcomes of the two Brigby classes and those of the students of the other cases. The findings of this case analysis demonstrated that motivation is decreased and effectual learning strategies are blunted when: Students are asked to do an educational program at the museum for which they are unprepared and which is not linked to their current lessons in school; they are unsure whether their performance is being assessed or not; the work they do at the museum is perceived as not having a clearly defined purpose; the students are not given feedback on the work they have prepared at the museum; their teachers choose not to become involved in delivering the program and remain passive onlookers at the museum; too little time has been set aside to do the program.

This does not mean to say that ineffectual learning and decreased motivation exclusively occur in museum visits that are organized in this way or that there are no positive learning outcomes as a result of this type of visit. The research findings demonstrated that despite the fact that the coursework of the cases was greatly varied, not least with regard to the time set aside to carry it out, a general response from the interview students across all five cases was that they felt that it was a learning experience to do coursework that took place at the museum. They enjoyed the break in the daily routine of lessons and they enjoyed themselves while they were there; this enjoyment was connected to the fact that they felt that they were given freer rein while working at the museum than they normally experienced when they having lessons at school. The students’ response was echoed by their teachers, who observed their students’ enjoyment and linked it to the informal learning environment of the museum. These general learning outcomes were
ensured irrespective of the collaboration or lack of collaboration between the teachers and museum professionals.

However, the research findings also demonstrated that students’ learning outcomes were optimized significantly when their teachers and the museum professionals collaborated to design coursework that incorporated the pedagogical and didactic practices and instruments of both learning environments, and time was set aside to develop and carry this coursework out.

4.1.1 Intrinsic motivation – the common denominator in optimizing GLOs

The research findings revealed that the students who had the most memorable learning experiences within all five GLOs were the ones whose work was intrinsically motivated. According to Deci and Ryan\(^1\), intrinsic motivation is the cornerstone of effectual learning. The findings demonstrated that all of the students were intrinsically motivated, to greatly varying degrees. On one end of the scale, some of the Brigby students were intrinsically motivated by not being assessed when they were doing the educational program at the art museum; on the other end of the scale, the Westby students experienced a state of flow when they were running laboratory tests on the soil samples from – and for – the museum.

Intrinsic motivation was promoted if the students were given a wide scope of action by being put in charge of organizing how to do at least some of their work. This increased their sense of self-determination and gave them a sense of ownership of the work process and the end product. Another important motivating factor was when the students experienced that their answers and products were taken seriously by the teachers and museum professionals. When at least part of the coursework was organized in such a way that the students were asked authentic questions and were set authentic tasks, \textit{and} their answers and products were taken seriously by their teachers and the museum professionals, the students’ interview responses revealed that they had been strongly motivated to do the work. In all but the Brigby case, the partners had taken this into consideration when organizing the coursework. In the Hammersby cases, the students’ products were furthermore given an authentic afterlife at the museum, and in the Westby case, the students’ test results were used by the museum in relation to its own test results. Besides being highly motivating, the participatory element of Hammersby and Westby activities enhanced the students’ abilities to think about, understand and manage their own learning.

\(1\) Deci (1985)
In both cases, the learning environment created by the teachers and museum professionals legitimatized the students as competent fellow players in their own groups as well as in the museum and at school.

The type of learning these examples represent can be classified as containing elements of free-choice learning, self-directed learning, experiential learning, open-ended learning and participatory learning, all of which overlap with constructivist and social constructivist learning theory and all of which promote students’ intrinsic motivation and thus their learning.

4.1.2 Assessment, agenda and identity

None of the students visited the museum of their own free will, as museum guests typically do. These students were visiting with their teachers and doing subject-related coursework at the museum. In all cases but the Brigby case, their work and products were assessed as any other school work would be. In this respect, their identity as students was not challenged and their agenda (motivation + strategies) was consistent with what they were required to do. The Brigby students enjoyed not being assessed while they were at the museum and not having to produce work that would be graded. However, because the educational program that they were doing at the museum resembled in design and content formal learning activities, and had in fact originally been designed so that it could be used in connection with school work, many of the students reacted according to their student agenda and identity and put a great deal of effort into understanding the program and doing the activities. Consequently, some of the students were disappointed when they were not allowed to present their arguments at the end of the program, i.e. perform as students, as they would in school. Others were frustrated because the time allotted to the activities was insufficient for them to do them correctly and satisfactorily.

In other words, the research findings demonstrated that it is not the students’ identity and agenda as students that should be challenged while they are doing the coursework at the museum. In fact, learning outcomes are optimized when students discover that the authentic questions they are asked compel them to apply their learning strategies in a novel way or apply a wider array of their learning strategies than classroom lessons ordinarily support or call for. Discovering that their learning strategies could be extended or adapted or that little-used learning strategies were effective to use in this new learning environment strengthened their self-confidence as learners. Assessment is an integral part of formal schooling. Giving the students an opportunity to be assessed outside the classroom, where
more learning strategies can be brought into play, made it possible for many different types of students to draw favorable attention to themselves and not only those who normally do well in the classroom.

4.1.3 Social aspect of learning

The students in all five cases worked in groups and they also met and communicated with museum professionals and experienced their teachers in a new context.

Regarding the students’ learning about and from each other, an important conclusion that can be drawn from the findings is that the students across all the cases noticed new character traits and competences in their classmates while they were working together at the museum. Because the museum setting was a new learning environment for all of the students, many of them experienced that group members were on equal footing and had equal say in how to do the work at hand. Thus, within-class social hierarchies and habits were reconsidered and perhaps changed.

In their groups they were given the role of being facilitators of each other’s learning. Learning outcomes were optimized when the teachers organized the groups in such a way that students with different competences worked together, and when the coursework was organized in such a way that each of those competences was necessary to do the tasks. Group work functioned especially well when the tasks the students were given to do and the products they were required to make served two purposes: 1) as subject-related assignments and 2) as contributions to the museum. This constituted what Nina Simon calls “real work”\(^1\) and it animated them to collaborate and draw on each other’s strengths, bound their activities at school and the museum together, strengthened their connection to the museum as well as aligned itself with their agenda (motivation + strategy) as students.

Another important conclusion regarding the social aspect of the students’ learning has to do with their interaction with their teachers. When they were at the museum, the students observed their teachers in a new context and in a new role. The research findings revealed great differences in teacher behavior and activity at the museum ranging from not being there or being disengaged onlookers to being substantially engaged at all stages of the students’ work. The findings showed that students who were well-prepared and motivated to do the coursework were not fazed by their teachers’ occasional absence or non-involvement – many of them were pleased to be left in charge of organizing some of their

\(^1\) Simon (2010), p. 195
work – while a number of students who were not prepared or motivated to do the work experienced frustration or became indifferent or displayed inappropriate behavior because they lacked supervision and support. At the other end of the scale, students who experienced their teachers as being substantially engaged in the subject matter and in the coursework and activities felt that they and their work were taken seriously. In the latter case, the students’ sense of themselves as legitimate fellow players on the field was strengthened. These students recollected learning experiences within all five GLOs.

Briefly turning the perspective around and looking at the student-teacher interaction at the museum from the teachers’ point of view, a significant finding of the research is that while they were at the museum, many teachers saw their students in a new light, noticing strengths and weaknesses of which they had not previously been aware. These discoveries affected the teachers’ assessment of the students and the important thing is that the new assessment was based on a more well-rounded perception of the students.

The interaction between the students and the museum professionals was also a significant learning experience for the students. Across the cases, the museum professionals were considered experts by the students, many of whom also observed that the museum professionals and the teachers had different kinds of knowledge. The fact that the museum professionals would not grade their performance or product made it easier for some students to ask them questions instead of their teachers. A decisive factor in how their interaction developed was how the museum professionals viewed the students, which also had to do with how they viewed their role in relation to them and to the coursework. The approach the museum professional chose to adopt in relation to the students was also influenced by the quality of the collaboration they had with the student’s teachers.

A final point regarding the social aspect of the students’ learning at the museum is that the students’ learning outcomes were enhanced when the teachers and museum professionals joined forces to facilitate the students’ work or to give them feedback. This was especially clear in the Hammersby case and the one Cranwell class. This also harks back to the earlier section about intrinsic learning.

4.1.4 Formal and informal learning environments
It was useful to distinguish between the “formal” and “informal” in relation to the learning environment that was created in the *interface* cases. This research looked at the learning that took place in the interface or *mesh* of two learning environments: The formal learning environment of the upper secondary school and the informal learning environment of the
museum. The research has shown that the two learning environments did not merge or blend in the interface between them, hence the word “mesh”. Traces or strands of each learning environment remained intact: On the one hand, elements of formal education such as syllabus and product requirements, learning objectives, the student-teacher relationship, abstract theory, group work, and student assessment, and on the other hand, elements characterizing the museum learning environment such as tangible objects, sensory experiences, open-ended knowledge, free-choice and self-directed learning, “playfulness”, freedom of movement and freedom from assessment. The research demonstrated that when effort is put into articulating and optimizing the reciprocal action and effect of these and other elements of formal and informal learning, a generative fundament for what I conceive of as interface learning can be the result. The most obvious example of this was the Hammersby case, where the differences between the two approaches to learning were articulated and incorporated in the coursework by the teachers and museum professionals. Because of this, the students were compelled to draw on resources from both learning environments and thus gained – though experience – an understanding or at least a sense of their complementarity.

Furthermore, it is useful for the teachers and museum professionals to verbalize the differences and similarities of the two types of learning environment, also as a way of distinguishing between the two communities of practice. As the Hammersby and Westby cases revealed, if the partners explain their own learning environment and plan how to put it to use fruitfully in the coursework, the partners and, ultimately, the students learn how to make relevant use of a learning environment outside of school. Furthermore, verbalizing the presence of and drawing on the formal learning environment in the informal learning environment of the museum creates a space for the students’ normal agenda (as students) to gain a foothold.

4.2 Regarding collaboration between upper secondary school teachers and museum professionals

Regarding partnership collaboration, the findings of the analyses of the five cases unequivocally corroborated Hord’s claim that communication is “the keystone”\(^1\) of successful collaboration, not only collaboration between the partners but also within the individual partner’s own organization.

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\(^{1}\) Hord (1986), p. 24
4.2.1 Partnership and in-house communication

The need for clear communication lines between the partners was proportionate to the scale of their ambitions regarding what kind of learning experience they wanted to create for the students while they were at the museum. It was their level of ambition that determined how much time and effort they invested in the joint enterprise of developing coursework that incorporated the museum as a learning resource. When their activities were limited to offering students short, off-the-shelf guided tours at the museum, the word partnership ceased to be an appropriate designation for their relationship. This was the case in the second year of the Brigby partnership. Characteristically for this type of school visit at a museum, only a minimum of communication was necessary between the school and the museum. Conversely, in the other four cases, the partners had high ambitions for the students’ learning experiences, and this necessitated a high level of communication, which functioned at varying levels of success in these four partnerships.

A decisive factor in the development of partnership communication is the degree to which the individual partner enters into the collaboration with an open mind, i.e. without preconceived notions about the other institution. Because it is difficult to pinpoint and verbalize such preconceived notions, it is very important that each new collaboration sets aside sufficient time for preliminary dialogue. The Hammersby and Shoresby cases were illustrative of the importance of preliminary dialogue. In the former, because the collaboration involved new teachers, the museum director and the teachers agreed to start from scratch, matching their expectations and agreeing about how the work would be distributed among them and what their roles would be in relation to the students. The interview responses of both teachers and museum professionals showed a high level of satisfaction with their collaboration and with student learning within all five GLOs. In the latter case, not enough time was set aside for the preliminary dialogue because it was assumed that introductory preambles could be skipped, as all but one of the participants knew each other from previous successful collaborations; doing away with the preliminary dialogue resulted in disappointed expectations on both sides.

The research findings demonstrated that a stumbling block on the way to fully realizing the potential of partnership collaboration is the adherence to conventional views held by both teachers and museum professionals regarding the museum’s role in the collaboration. These views are moored in the museum’s role as a service provider who treats its visitors as customers and is accommodating and customer-oriented. As a partner
in this sort of collaboration, the museum professional must distinguish between the teacher as a customer and as a partner. If he sees and treats the teacher as a customer, the relationship will become skewed because “the customer is always right” - mentality, both his and the teachers’, becomes a roadblock to non-hierarchical communication between partners of equal standing. If the museum professional explicitly states that she sees her and her museum’s role in the collaboration as being the provider of a service to the teacher and the students and that she wants to negotiate how this service is to be delivered and what it is to include, she places herself on equal footing with the teacher. This is how the museum professionals in the Hammersby and Westby partnerships handled their “half” of the collaboration. If the partnership is to flourish, the relative strength of the partners in their collaboration is an issue that must be dealt with by both teachers and museum professionals. Preliminary dialogue meetings and evaluation meetings give the partners the opportunity to negotiate and specify what roles they wish to play in the collaboration and in the deliverance of the coursework, thus nipping any risk of being sidelined in the bud.

If the coursework is a product of the concerted efforts of the museum professionals and teachers, ownership of it is shared, thereby ensuring that both groups feel equally responsible for its success with the students. This type of collaboration was practiced in the Hammersby and Westby partnerships. The Cranwell and Shoresby partnerships encountered problems because the level of information that was exchanged was insufficient, a condition for which both partners shared equal responsibility.

The research findings also demonstrated that in-house communication about and in-house acceptance of the work involved in interface collaborations are also necessary if the partnership collaboration is to flourish. It is important for the partners to have the support of management and the support or at least the acceptance of colleagues and other staff members whose daily routine may be affected when the students are doing the coursework. The active, attentive support by management in both institutions is a very important contributory factor to the success of the partnerships.

4.2.2 Causal link between the quality of students’ learning and the quality of the partners’ collaboration

Taking the conclusions regarding the two types of communication a step further, the findings have also revealed that there is a causal link between the quality of both types of communication and the optimal realization of the museum-school interface as a learning environment for the students.
In the Hammersby and Westby cases, the students’ recollections of their learning experiences coincided with how their teachers and the museum professionals remembered them. They also reflected what both sets of partners had set out to do. In the Shoresby and Cranwell cases, breakdowns in their communication affected the students’ learning experience. In the Shoresby case, the breakdown took place early in the collaboration and although it did not affect how the students themselves perceived their learning experience, the breakdown limited what they learned at the museum, which became little more than a backdrop to their products and presentations and a venue for the event of parents’ visit. The museum professionals felt that the potential of the museum as a learning environment was not taken seriously and given room to unfold. The teachers did not become aware of the breakdown until after the coursework was completed, which in itself is a sign that the partners’ communication was not optimal. In the Cranwell case, the breakdown in communication – both in-house and between the partners – occurred towards the end of their collaboration, during the practical execution of the coursework and had, as the data showed, an adverse influence on the learning experiences of one of the classes working at the museum. In both the Shoresby and Cranwell cases, there were also important issues that were not addressed: The Shoresby museum professionals did not speak out about their frustrations at being sidelined and the Cranwell teachers did not make a point of explaining to their partner that one of the classes needed extra support and supervision and then working out together what measures to take to provide for this need.

A significant conclusion of this dissertation is that if interface partnerships or similar partnerships want to ensure optimal learning for the students, the ubiquitous conviction that school-museum collaboration is an overly time-consuming and resource-intensive activity must be dismantled. This dissertation has shown the depth and breadth of the students’ learning within the five GLOs was proportionate to the partners’ investment of time and effort in all stages of the collaboration.

4.2.3 Learning from the collaboration

In their interviews, the Hammersby teachers and the museum professionals made a point of relating how they saw their collaboration as a kind of continuing education. Both groups learned not only by bringing their own knowledge and competences “to the table” in the planning stage but also by experiencing each other’s practice in action, e.g. discovering how archaeological digs produce new knowledge or observing how a teacher applied pedagogical and didactic measures in her or his interaction with the students.
The research findings demonstrated that across the cases, the participants in the collaborations learned from working together, to varying degrees, depending on the level of their ambition and the quality of their communication. In some cases, this learning altered the conventional way of thinking about museums as a learning environment for upper secondary school students.

Of the cases, only Cranwell organized and carried out a proper evaluation meeting including an agenda and minutes approved by all. Evaluating the collaboration and the design and content of the coursework after its completion is a negotiation of how that mutual experience will be remembered followed by a negotiation of how the next mutual experience should develop and take shape. Ideally, evaluation meetings contribute to the partners’ learning from and about their collaboration as well.

5. Institutional context – *intrface* in museums and upper secondary schools

A key point of this dissertation regards the strategic implementation of *intrface* coursework and collaboration in the institutional context of museum and upper secondary schools. Both at the time of the *intrface* project (2008-2011) and at its current status as an association of approximately seventy fee-paying members, *intrface*’s mission, functions, organization and activities – and thus also the five cases of this dissertation – fall under and conform to recommendations and key action areas specified in the white paper on museum education published by the Ministry for Culture in 2006, the Danish Agency for Culture’s Dissemination Plan (2007-2013), the guidelines of the administrative basis for the educational and cultural development strategies of Central Denmark Region, the Ministry of Culture’s 2014 National School Services Network initiative and finally, the ongoing changes in upper secondary school curriculum, didactics and organization brought about by the 2005 Upper Secondary School Reform and its subsequent revisions.

The GLOs were developed as a method to measure the impact museums have on their users’ learning. The analysis of the GLOs revealed that the understanding of learning and the learner underlying the GLOs and the terminology used to define the GLOs resemble the understanding of learning and the learner and the terminology of the statutes for the study programs of upper secondary schools and of the curriculum for the multi-subject course, the learning outcomes of the Danish and European Qualifications Frameworks as well as of the EU’s eight key competences. The dissertation also showed that the GLOs accommodated and described the learning outcomes of the students who did the
coursework of the five cases. Thus, the GLOs provide interface partners with a strategic method to use in the design, development and evaluation of museum-based coursework for students. The GLOs would facilitate the partners’ communication about learning, which is at the heart of the practice of both communities, and thus contribute to the development of an educational practice at the interface between them.

The findings of the dissertation demonstrated that the individual partner’s learning experience at the boundary between the two communities of practice not only gave him insight into the other community's practices but also meant that he gained a new perspective on his own practice by experiencing it from the perspective of his partner. Underlying the partners’ joint enterprise was an ambition to create a learning experience for the students and in the process of their collaboration they learned about each other’s institutions as learning environments. In the ongoing development of both schools and museums as learning environments, collaborating in partnerships can be used strategically as continuing education, which furthermore has the advantage of not being detached from practice. On the contrary, the partners’ learning and practice are tightly connected.

In continuation of this, the knowledge that the teachers of the five cases saw their students in a new light while they were working at the museum, noticing levels of activity, competences and skills they had not previously noticed, makes partnering with museums a logical way of ensuring that students 1) are given the opportunity to become aware of and get practice in using different learning styles and strategies and 2) are seen by their teachers as learners who make use of a range of competences and skills; when teachers get a more well-rounded view of their students, this has significance for their grades. Incorporating the museum learning environment in school-related coursework is furthermore a way of providing a wide range of learning opportunities for the increasingly heterogeneous student body of upper secondary schools.

School management at upper secondary schools is expected to attend to the pedagogical and educational development of their schools, enter into strategic collaborations with other educational institutions and stay abreast of political, cultural and social trends in the community. Working in partnership with a local museum is a way of living up to these expectations. In the same breath it can be said that museums are expected to collaborate with institutions of formal education and to develop educational programs for the students, so for museums, entering into strategic collaborations with schools is just as logical a step to take.
For museums, *interface* partnerships can be used strategically as a means of audience development in relation to both students and teachers. If the teacher feels that her students profited from doing the coursework, and if she experiences the collaboration with the museum as open and flexible, it is likely that other teachers will hear of it by word of mouth as in the Hammersby, Shoresby and Brigby cases.

As far as developing the students as a museum audience is concerned, it is the quality of the coursework and the students’ learning experiences that is critical. The research findings showed that doing the coursework at the museum can have an adverse effect: Both classes of Brigby students indicated that they were less likely to use the museum in connection with school work or in the spare time. However, the research findings also showed that, after they had done the coursework, the number of students in the Hammersby and Westby cases who indicated that they were likely to visit these museums in connection with school work had increased compared to before the coursework. There was also a slight increase in the number of students in both cases who indicated that they might visit these museums in their spare time.

At the same time, in four of the five cases, the coursework made it possible for the museum professionals to communicate more closely with the students than a traditional school visit would allow. In the long term, contacts of this sort can be used by the museum to develop and tailor its educational programs for other schools and types of students, keeping in mind that their teachers should also be involved in developing them. Museums can spend educational program funds strategically by developing programs that are meaningful for young people to use in conjunction with their school work instead of investing time and effort in developing programs to get young people to visit museums in their spare time.
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Appendices

PhD dissertation
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There are four appendices to the dissertation. Each appendix is equipped with a tab with its name:

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Brigby Gymnasium & HF and Brigby Art Museum

The school

Brigby Gymnasium & HF is a relatively large upper secondary school that opened in 1971. There are approximately 1000 students, ninety-five teachers and fourteen administrative and technical staff members. According to the school’s website, its three main goals are to provide a high quality education, ensure social unity and make room for diversity. The school itself is an architectural landmark, drawn by Friis and Molkre.

The museum

Brigby Art Museum is a small Art museum dedicated to displaying the artwork of four generations of one family. It is housed in a heritage building, a former town hall from the 18th century. The museum, which opened in 1937, has been housed in different buildings, and over the years the collection has expanded to include work not only by the four generations of artists, but also by their contemporaries. Today the museum’s collection represents Danish art and crafts from around 1830 to 1960. There are nine employees in all, three of whom are academically educated. Approximately 13,000 people visit the museum every year. The museum is 3.9 km from the school.

There are two academically trained, full-time people at the museum, one of whom is the director. There is also a part-time academic who was hired in to assist with a few special exhibitions.

The partnership

At the time of my research into this case, Brigby was a second-year interface partnership. Two teachers and two classes and a focus group of students were involved for the first year of collaboration with Brigby Art Museum; the following year (2011-2012), two new teachers and classes became involved. My focus is on this second year of collaboration; what happened the year before will be used for comparison and discussion.

In January of 2010, the two interface project leaders set up a meeting with the partnership Brigby Art Museum and Brigby Gymnasium & HF with a view to launching its first actual collaboration on a project.

There is no mention of being a member of interface or of the partnership on either institution’s website.

Adult interviewees
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There were two people who link the second year to the first. Harold participated with a class and a focus group of students in the first year of collaboration with the art museum\(^1\), and was later appointed *interface* liaison officer at his school. He was responsible for maintaining and developing the school’s *interface* collaborations, not only with their partnership museum but also with other museums. Harold was a contributing factor to furthering the collaboration with Brigby Art Museum by encouraging Heather and Beth, two of the other interviewees of this case, to participate, and facilitating the organization of their visits. However, Harold did not visit the museum with a class of his own during the time I was researching Brigby, a fact which renders his status different from all the other adult interviewees of this study. His interview is therefore used as supplementary material if and when it is relevant to do so.

The other person linking the two years of collaboration was Tammy, also an interviewee. She was the museum educator and was responsible for the museum’s collaboration with the school both years. In May of 2012, Tammy left her position at Brigby Art Museum to move to a different museum.

Heather and Beth were both relatively young teachers at Brigby Gymnasium & HF. They struck one as being dedicated teachers - enthusiastic, conscientious and well-liked by their students. Both classes had been working with literary periods and their visit to the museum was intended to be part of their preparation for their Danish-history paper.

*Students*

In the two 1st-year classes there were about twenty students in one of them and about twenty-five in the other. In both there was a majority of girls. Eleven of the students in Beth’s class and nineteen in Heather’s answered both the pre- and post-online questionnaires. Approximately two weeks after the students’ visits to the museum, I conducted two group interviews, with two girls and a boy from each class, respectively.

*The coursework*

During the first year of the partnership’s collaboration, the coursework Harold, Dorothy, and museum educator Tammy worked together to develop was for three subjects: Art, history and Danish. The museum’s goal was to develop teaching material that

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\(^1\) Harold’s colleague Dorothy also participated actively in the first year of collaboration between the school and the museum. I chose not to interview her for this case as she did not play any part in the second year of collaboration. As Harold himself did not participate with students in the present case, his interview responses are used only to contrast or complement the viewpoints and perspectives of his colleagues, Beth and Heather and Tammy, the museum educator.
could be re-used for students in grades nine as well as at ten and at upper secondary schools. Harold and Dorothy participated with one class each and the coursework they developed with Tammy was to be used as supplementary reference material for the students’ first-year mandatory paper in Danish and history.¹

After this first collaboration was over, the museum educator, Tammy, continued to develop the coursework with Harold, focusing on the most famous of the artists. She made use of a few of the school’s students, who agreed to function as a focus group who would try out the material at various stages in its development, while Harold acted in an advisory capacity, e.g. informing Tammy about syllabus mandates or imparting historical knowledge. The final coursework was digitalized as software on a tablet PC, which, together with photocopies of archival material such as the artist’s letters, the literature and philosophy of his day, newspaper articles and other artists’ works, etc., made up the secondary material the students used to understand and analyze his work. A five-minute introductory sound and light show was added as a multi-sensory experience.

The entire educational program is called RomanticArt² and it was this program that Heather and Beth chose for their students. The program on the tablet led the students, working in groups, through a series of activities, where they were asked to examine the artist’s paintings through the lens of the historical material. Furthermore, the program gave the students a choice of statements pertaining to the paintings in the exhibit as well as of so-called Argument cards about Romantic art. They were challenged to use the resources mentioned above to formulate arguments supporting their statement in relation to the painting they had been assigned. When the students had gone through all the steps of the program, two of the groups were selected to participate in a debate, where they used their arguments and historical material to defend the statement they had chosen. During the debate, the two groups stood across from each other, beside one of the artist’s paintings, while the other groups sat or stood on the floor in front of them.

*My participation*

There were no meetings between Heather or Beth and Tammy prior to or after the two classes’ visits to the museum so my pre-interview understanding of their collaboration

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¹ This coursework was uploaded onto the partnership’s slot on the intrface website (2010), and no other coursework has been uploaded since.
² RomanticArt has its own website. Due to the use of pseudonyms in this dissertation, there is no link to the website. There is no mention of the teachers’ and students’ participation in developing RomanticArt on the museum’s website.
Appendix Partnership Introductions and Field Notes

was based upon my observations of them and the students on the days of their visits at the museum. That was also when I met Heather and Beth, respectively, for the first time. I had met and spoken with Tammy on many other occasions.

Brigby Field Notes

1x Brigby

Nineteen students in 1x visited Brigby Art Museum on a rainy Friday, April 13, 2012. They turned up on time, arriving by bus, motor scooter, bicycle or car. They were in high spirits; according to a couple of boys I talked to in the foyer of the museum, they were happy to get out of their German lesson at school. The mood was congenial and the students seemed fond of their teacher, Beth. Twenty minutes later, at 12 o’clock sharp,¹ the students and Beth were seated on two tiers of folding chairs in the Golden Age exhibition hall facing Tammy, who introduced herself and then spent about five minutes talking to the class about National Romanticism. The students were quiet and attentive and a few put their hands up, when Tammy asked them about what they knew about this period in (art) history. Tammy was attempting to create a dialogue with the students in order to get “the feel of them” and an idea about how well-prepared they were for this visit. She had not met them or their teacher prior to this visit. Her presentation and the questions she asked had to do with the history, religion and daily life of the period, thereby giving the students a foretaste of the content of the RomanticArt program. During this introduction, Beth was silent.

Then Tammy introduced the program, handing out tablet PCs for the students to share among themselves so they could follow along while she told them about how to manipulate them. She herself also had a tablet. It was difficult for the students to see what she was pointing at on her tablet’s little screen, but they did not ask her any questions. She explained at length how the program worked and what their tasks were. She also told them that there were no right or wrong answers to the tasks on the RomanticArt program. This part of Tammy’s presentation took about fifteen minutes and by the time she was finished, some of the students were no longer paying attention.

The students were split into pairs or small groups of three and each group found the painting they had been allotted. After experiencing the sound and light show, the students started familiarizing themselves with the tablet PC and the program. By this time, it was

¹ I assume the students had eaten lunch before coming to the museum.
12:30 p.m. They spent a good deal of time working out how to use the tablet and navigate the program and they asked Beth and Tammy many questions. Most of the groups were sitting on the floor and when they asked Tammy questions, she either sat on the floor with them or got down on her haunches to talk with them. I noticed that when they asked Beth questions about the program, she referred them to Tammy. I also noticed that there was one group of students who were still unsure about how to use the program at 12:55 p.m., meaning that they had spent nearly half an hour trying to figure out the technicalities of using the tablet and the program. I overheard one student ask Beth about the difference between the statements and arguments of the assignment and she referred the student to Tammy, who answered. It was clear that Beth had a limited understanding of both the technicalities of the tablet and the content and tools of the assignment. However, Beth answered general and subject-related questions about structuring arguments and what was meant by the concept “historical source.” Another group asked Tammy a subject-related question about their painting and she explained to them how to use the arguments, etc., but told them that they themselves had to choose which arguments to use; she said, “You have to choose, no answer is wrong. People look differently at paintings.”

The screen on the tablet was relatively small, which meant that the students had to hunch together to see it. I thought to myself that they seemed to spend more time looking at the images on the tablet than they did looking at the paintings in the exhibition. The class appeared to be well-disciplined, doing their work quietly. They seemed to get along very well together. Shortly before Tammy asked the students to gather around a certain painting for the debate or “Battle”, as she called it, I noticed that some of the students were walking around the exhibition looking at the paintings.
Appendix Partnership Introductions and Field Notes

The two groups that had worked with this painting were to participate in the debate. Tammy placed them on either side of the painting and asked the other students to sit on the floor or stand in a semi-circle in front of them. She encouraged the listeners to contribute to the debate, as they had worked with similar paintings, statements, arguments, sources, etc. Tammy christened the two groups Golden Girls and the Wild Duck.1 The Golden Girls were two rather nervous girls who seemed not to have made much progress during their preparations. There were three students in the Wild Duck, two girls and a boy, and they seemed much more at ease with the situation and clearly felt that they would be able to do well in the debate. Tammy was in charge of keeping the debate on track. She used words like “Time out!” and “Knock-out” and “Punch,” causing the students participating in the debate to laugh self-consciously and the other students to giggle. There were a few relevant comments from the debaters’ audience, but also teasing remarks. Clearly Tammy wanted to keep the atmosphere cheerful and easygoing as well as make sure that the learning outcomes of the RomanticArt program were verbalized. She herself rounded off the debate by reiterating its most important points and then naming a winning team (and lifting the winners’ arms). Beth remained quiet the whole time, more or less fading into the group of listening students.

After the debate, Tammy asked the students if they wanted to experience the sound and light show again. They said yes but did not listen as attentively as the first time. One group of boys was chatting about some gadget one of them wanted to buy. It was as if everyone was getting ready to leave. However, Tammy asked the students to sit down on the chairs again and when they were seated, she asked them if they had any questions regarding the day’s program. Three students asked relevant, subject-related questions, e.g. why the museum had chosen to collect P.C. Brigby Art’s paintings and if all the paintings were originals. Tammy answered the questions and then asked the students if they had learned anything about the Golden Age that they had not known prior to their visit. The students replied in a non-committal way. After Tammy thanked them for their visit, she was given a round of applause by the class. It was 1:30 p.m.

Afterwards I asked two girls about their impression of the RomanticArt program. They both thought it was fine but had been a little confused at the beginning by the assignment and about how to get the tablet and the program to work.

1 This was the group’s own suggestion.
Appendix Partnership Introductions and Field Notes

1z Brigby

On April 25, 2012, a sunny, mild Wednesday, twenty-five 1z students arrived at Brigby Art Museum just before noon, twelve days after their sister class 1x’s visit. The two classes’ visits were tailored to the same pattern, but the 1z visit was different in a number of significant ways. For example, as a result of things Tammy had decided needed improving following 1x’s visit, she made some alterations to her introduction to the museum and the presentation of the program. For example, before inviting the students and their teacher, Heather, to sit on the folding chairs in the Golden Age exhibition hall, Tammy made a point of showing them around the room, encouraging them to look at the paintings. There was much talk and giggling among the students, but her encouragement resulted in many of the students pointing at the paintings and leaning close to study them.

After they were seated, and I had introduced myself and asked for volunteers for the student interview, Tammy spent time telling the students about the artist’s family, his day and age and National Romanticism. She asked the class a few questions and five or six students raised their hands and answered. She emphasized that their answers and knowledge would be useful when they worked with the RomanticArt program and that the goal of their activities was to discuss what Golden Age art was. Then Tammy introduced the RomanticArt program on the tablet PC without distributing the tablets among the students beforehand, as she had done with 1x. Heather did this instead, when she split the students up into eight groups and handed each group, still seated, a tablet. Heather made sure that each student could see the screen on the tablet, e.g. by looking over each other’s shoulder. She herself paid close attention to what Tammy told them about the tablet and the program, keeping an eye on the screen of one of the tablets. Tammy explained the program in great detail and how to use the photocopied material; her presentation was more thorough this time than last but did not take much longer.

The students were attentive during the sound and light show, standing in front of their allotted paintings.¹ They seemed quite absorbed and a few of them even hummed or sang along when the national anthem² was played as part of the sound and light show. By 12:30, all of the students had started working with the tablet. There were three groups who

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¹ Some of the paintings were allotted to two groups.
² Denmark has two national anthems: N.F.L. Grundtvig’s “There is a lovely country” (1819) and “King Christian stood by the lofty mast”, which is the Royal Anthem (written in 1778, adopted as the Royal Anthem in 1780). It was the former that was part of the sound and light show at the museum.
needed extra help with it. For the next twenty-five minutes, most of the students were busy at their tablets and with the extra material in an effort to get their work done.

It seemed that Heather and Tammy spoke together more than Tammy and Beth had done when 1x was visiting, and Heather was more active in organizing the students’ work and answering their questions. She did not refer them to Tammy as often as Beth had done.

Tammy made a point of going from group to group and reminding them to study their painting and not just look at the tablet, something she had not done to the same degree with Beth’s class 1x. Tammy’s efforts were rewarded. More students in this class than in 1x stood in front of their paintings and discussed them and walked around the exhibition hall looking at other paintings. By 1:00 p.m., most of the groups had finished their work and were walking around looking at the paintings. There was some low talking and laughter. The atmosphere was congenial and relaxed.

Tammy and Heather spoke together quite a bit, i.a. about how best to organize the debate. When the students were gathered at one of the paintings, and two groups were chosen to participate in the debate, Heather helped Tammy explain what to do. Tammy encouraged the other groups to support the two teams, who were dubbed The Nationalists and The Spirits.

The debate itself was very similar to 1x’s debate, but when it was nearing it conclusion, a student in the group of listeners raised his hand and asked Tammy when it would be his group’s turn to present their arguments. He seemed rather disappointed when he found out that there was only time for one debate.

At 1:20 p.m., Tammy rounded off the visit by thanking the students for their visit and participation in the debate. The students applauded and got ready to leave. Three students volunteered to let me interview them.

Heather and Tammy both spoke with me afterwards; both said that they thought the students had been too pressed for time. Heather mentioned that the students had taken the
Appendix Partnership Introductions and Field Notes

work seriously and had behaved well. Tammy felt that the program might have been too complex and the extra materials too difficult. They agreed that the students had done a good job.
Hammersby Gymnasium & HF and Hammersby Museum

The school

Hammersby Gymnasium & HF is an upper secondary school that opened in 1960. There are approximately 600 students and forty-six teachers. According to the school’s website, its vision is to be comparable to the best schools nationwide, to strive to increase the number of young people from the local area that get an upper secondary school diploma, and to offer the students the best possible physical setting and equipment to ensure their educational and personal development. The school’s set of values includes i.a. the importance of the school providing a social environment and fruitful setting for cooperative learning, helpfulness and socially responsible behavior.

The museum

The museum is a cultural history museum and a local history archives and is situated just across the street from the school. In 2012 there were just over 11,000 people who visited the museum. This is how the museum presents itself on its website page:

“Meet 12,000 [sic] years of the past. The museum has excellent collections and more than 1000 square metres of exhibits. Different permanent displays include a variety of themes: The old museum and the first collections, a room designed as from the thirties. Ethnology / local heritage. Archaeology, with finds from Viking Age, Migration Period, Early Iron Age, Bronze Age and Stone Age.

The local collections of more recent date include daily utensils, costumes, textiles and other items from the rural culture and early railway-town settings in the former heath land . . . .”

The original museum building is from 1935. It is now the entrance to the rest of the museum complex, erected in the old vicarage gardens, which is now a museum park. The new exhibit building was built in 1999. There are five academically trained full-time people on the permanent staff, two of whom are the director and a middle manager. There are also four academically trained full-time employees who are hired in for specific (archaeological) projects. The museum’s museum educator and its registrar also work full-time but on a non-permanent basis.

The partnership

The partnership started in September 2011 as part of the intrface project in North Denmark Region. This project was a follow-up project of the original intrface project, which

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1 The museum’s name is a pseudonym so there is no link to the website.
Appendix Partnership Introductions and Field Notes

had been concentrated in Central Denmark Region. Four teachers as well as the school’s principal attended the kick-off meeting, which was held for all five partnerships in the North Denmark Region. This meeting was held at Hammersby Museum, and the director of the museum and the people from the school held their first official partnership meeting after the introductory session. The principal and the museum director already knew each other prior to the kick-off meeting.

On the school’s website, under the school’s key action areas, there is a short description of the school’s interface collaboration with the museum and a link to the interface website. Furthermore, there is a long, detailed description of the coursework involving local, very famous Viking ring fortresses. Similarly, on the museum’s website, there is also a full description of this same project, and the teachers’ names are mentioned alongside the names of two of the people from the museum with whom they collaborated.

The present case comprises two sets of coursework carried out in two consecutive school years involving four teachers (two the first year, two others the second) and several museum people, including the museum director, Brad, and the museum educator, Carl, the first year (March 2012) and Brad and the archivist, Mickey, the second (December 2012). Other museum staff members that were involved both years were archaeologists and volunteers.

Shortly after this, the museum and school developed and carried out a third project.

Adult interviewees

For the sake of clarity, the first coursework is named Ring Fortresses and the second coursework is named Rethinking Ashton.

In Ring Fortresses, the two teachers, Dolly and Joe, were very enthusiastic about working with the museum. Both were involved from the very beginning of the partnership, which was launched at the kick-off meeting mentioned above. Both were experienced teachers and they had worked together on other projects before.

Brad and Carl from the museum were also very enthusiastic about the collaboration. Carl was more used to working with elementary school children than students from an upper secondary school. He was in fact trained as a school teacher and had run a free school before he came to the museum in 2011. Brad became director of the museum in 2008 and was an active supporter of the interface concept.
Appendix Partnership Introductions and Field Notes

In Rethinking Ashton\(^1\), the two teachers, Selma and Vera, were also keen to work with the museum. They had heard many good things about the school’s collaboration with the museum from their colleagues, Dolly and Joe. Both were experienced teachers, both lived in Ashton. In fact, Vera had also lived there as a child and had an intimate knowledge of the town and local area.

Brad was also involved in this collaboration and was thus an important link between the two generations of the partnership. The Rethinking Ashton coursework entailed a lot of work for the students in the local archives, which are housed in the basement of the museum, so the museum archivist, Mickey, was enlisted to help. Mickey was not used to working with young people enrolled in an upper secondary school, as most of his guests were either people searching for information about their families or who had inquiries of a more official nature. Mickey had worked at the museum since 2008.

**Students**

The class (1s) doing Ring Fortresses was a 1st year class. There were about twenty-five students, with a majority of girls. These students did not fill out the online Pre- and Post-surveys as they had started the coursework before the surveys were ready to be used. However, three students agreed to be interviewed shortly after the coursework was completed.

Rethinking Ashton was for a class of 2nd year students (2t). There were twenty-eight students in the class, with a great majority of girls. Not all of the students answered both online surveys, which is why the number of responses tallies fewer than twenty-eight.

**The coursework**

The Ring Fortresses coursework was part of the class’ multi-subject coursework, in which the subjects were mathematics and history. The students were given the following matters to examine:

Why were the ring fortresses built and who was king at the time? What do theories tell us and what more can we learn by asking for information from the museum and associated resource personnel?

Was there a correlation between mathematics and society? How can mathematics be applied in a discussion of how the fortresses were used and the nature and status of the center of power of that day?

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\(^1\) Ashton is a pseudonym for the name of the town where Hammersby Gymnasium and Hammersby Museum are located.
Appendix Partnership Introductions and Field Notes

How have the two subjects developed as far as their empirical methods and theories are concerned? How is this development influenced by the museum’s research and archaeological excavations?

An entire week’s lessons towards the end of March in 2012 were devoted to the coursework, and two lessons the following week were spent at the museum, where there was a reception and the students’ product was unveiled.

Part of the week was spent at the school studying historical sources concerning Viking history. The students also spent time at the museum, where archaeologists introduced them to various scientific methods of dating archaeological finds. The students were also taken on field trips to measure the ring fortresses in order to get an idea of the Vikings’ mathematical knowledge and abilities and to discover similarities and differences between the two fortresses.

One of the students’ tasks was to produce a Wheel of Fortune in the shape of a perfectly round Viking shield, divided into thirty “pie slices”. Each of these slices represented a historical source including find site, approximate age and a photo or drawing of it. When the Wheel of Fortune landed on a particular slice, the student who had spun the wheel was to explain how the find was significant in relation to the theories about the ring fortresses. The correct answers had been prepared by the students earlier during their coursework and were printed on laminated paper. The Wheel of Fortune and the answers were given to the museum and placed in one of the Viking exhibits.

The students were also asked to draw a geometrical model of the Trelleborg Fortress and compare it to the two other ring fortresses’ geometrical construction. They were also expected to fill out an empirical material // theory chart for each of the theories and / or historical sources they worked with.

An important question the students were expected to work with and discuss was “What mathematics did the ring fortress builders use and is that type of mathematics in use today?”

Rethinking Ashton was carried out in December 2012. The coursework has not been uploaded to the intrface website. It was a multi-subject course comprised of the subjects history and geography. The class was split into six groups, each of which studied the town of Ashton, focusing on one of six topics: Parks and recreational activities, business and industry, traffic, housing, downtown, and education. The overarching topic was how the town had developed from when it was a small provincial town with a railway station to its
present state as a commercial town, now without a railway station. On the basis of their studies and discoveries during the week of the coursework, the groups produced informed scenarios about the future of Ashton as well as formulated an opinion about whether or not its future, viewed in a historical perspective, promised further development, or its gradual phasing out and dismantling. These scenarios were composed as Powerpoints, which were presented in class at the end of the week. The students were told that their presentations would subsequently be registered as archival material in the archives and that the best presentation would be put on the museum’s website.

The week’s work started with an information session with both teachers, Selma and Vera, where the students were given the particulars about the coursework. This session was followed by lectures given by three experts invited to speak to the students about Ashton’s development seen from historical, commercial, political and cultural perspectives. Then the students went on a city tour with a former mayor of Ashton, who was also the chairman of the museum’s board of directors. The following day, the students were introduced to the museum by Brad and Mickey. Two groups at a time shared a time slot of ninety minutes to work in the archives, which are located in a few small rooms in the basement of the museum, where Mickey assisted them in searching for relevant documents and photos in the archive’s database. The students not working in the archives were busy examining the Map and Registry Agency website\(^1\), which is part of the Royal Library.

The next morning, the students met an archaeologist from the museum who told the students about how the Geographical Information System (GIS)\(^2\) could be used in archaeological research. The rest of the day was spent working in groups, examining sources found in the archives, working with other materials, texts and websites at school and preparing their Powerpoint presentations. The fourth day, Brad visited with all the groups at the school to answer any questions they might have. On the fifth day, all the groups presented their Powerpoints; each group’s presentation was attended by another group, both teachers, and in some cases Brad or the researcher. The listening group was responsible for giving the presenting group feedback, critical or otherwise, according to a series of parameters that were relevant in relation to the guidelines for multi-subject coursework.

\textit{My participation}

\(^1\) [http://www.kb.dk/da/materialer/kulturarv/institutioner/KortogMatrikelstyrelsen.html](http://www.kb.dk/da/materialer/kulturarv/institutioner/KortogMatrikelstyrelsen.html)

Appendix Partnership Introductions and Field Notes

The Ring Fortresses coursework had been planned and carried out before I became involved so my first face-to-face meeting with the teachers and the museum educator was on the day when I interviewed them. This was also the case with the students. The interviews took place approximately seven weeks after the students had done the coursework. The students did not answer the online surveys.

Regarding the Rethinking Ashton coursework, I participated in the partnership’s planning meetings and was privy to their e-mail correspondence. I observed their collaboration during the students’ visit to the museum, where I also observed the students. I was present when some of the groups presented their Powerpoints in class.
Hammersby Field Notes

At 8 a.m. on November 27, 2012, approximately twenty-five 2t students arrived at the museum, accompanied by Vera, their stand-in history teacher. This was the second day of their multi-subject coursework Rethinking Ashton. It was cold outside and they were glad to get indoors.

During their introductory tour with Brad through the museum, the 2t students were quiet and polite and, towards the end of the tour, some became inattentive and sat down on any available seat and whispered together. In other words, they did not display unusual behavior. When they got to the museum’s storage rooms, there were a few questions about where the museum found its objects. After the tour Brad invited them to the museum’s cafeteria for coffee, tea or soda, which the students enjoyed.

For the rest of that day, the students, now in groups, took turns visiting the archives, two groups at a time. They were lively and interested and asked a lot of questions about how to search the archive’s database.

The students appeared to be well-prepared for their work at the archives. They had a relatively clear idea about what kind of information they needed for their group’s topic. They soon discovered that their Googleing abilities were not completely transferable to searching Arkibas, the database of the association of local archivists in Denmark. Their search words and phrases were often too imprecise or broad, meaning they experienced quite a few useless hits. Some of the students quickly picked up the lingo needed to get the right results. When they were successful and found a document or photograph they could use, Mickey found the original straight away in the archives or wrote it down and found it for them later. When they asked him to, he photocopied the originals for them to use in their presentations. In some cases, the students were allowed to study the original archive material; otherwise they looked at photocopies where they could also read about the provenance of the materials.

1 http://www.arkibas.dk/ (Accessed April 8, 2014)
The next morning at 8 a.m., the students were assembled in the museum’s classroom to hear a talk about GIS by one of the archaeologists. This was very similar to an ordinary classroom situation and the students acted accordingly: Some were actively interested and asked questions, some grew restless and distracted, while most of them were quiet and seemingly attentive but did not participate. Perhaps their reserve was due to the fact that they were unfamiliar with the speaker (an archaeologist they had not previously met) and with the subject matter (archaeology and GIS).

Hammersby partnership meetings (Rethinking Ashton)

Preliminary meetings

Selma, Vera, Brad and Carl’s first planning meeting took place at the museum June 20, 2012, six months before the coursework period. Brad moved the meeting outside to a picnic table on a patio behind the administration building because the weather was sunny and warm. A second meeting took place at the end of September, six weeks before the coursework in December.

At the first meeting, it very quickly became clear that Selma and Vera were inspired by the description their colleagues Dolly and Joe had given them of their project Ring Fortresses and their collaboration with the museum. Vera even said that they were hoping to follow in their colleagues’ footsteps regarding the way the collaboration and coursework were organized. Both teachers hoped to leave this meeting with a clear idea of how they could make use of the museum’s resources for a multi-subject course. They had not decided a topic and were open to ideas. Brad obliged them by telling them about the museum’s areas of responsibility and work plans, among which registering and documenting the historical development of the local area’s agricultural industry were very important. He suggested that this might be a good topic for a multi-subject course, and one to which the museum could contribute many resources. He mentioned new research methods regarding finding sources and processing data and aired the idea that such activities might be interesting for the students if they were linked to investigating relevant archival material and visiting certain farms in the area. Carl remarked that the museum had

\[1\] It is important to remember that Brad and Carl had collaborated with Joe and Dolly in planning and carrying out the Ring Fortresses project so they were more familiar with e.g. the requirements of a multi-subject course and how organizing this kind of coursework could be done than if they were newcomers to this type of collaboration.
a large collection of photographs of farms and farmlands. Both teachers were very interested and mentioned that the students could work with contemporary and historical maps and Brad explained how the students could learn to find any number of maps on the database of the Land Registry and Mapping Services. After a little while, Selma asked Brad and Carl about other museum activities and Brad explained that urban development was also one of the museum’s areas of responsibility, and this eventually led to a discussion of how having a railway station in former days as well as its discontinuation had affected the town’s development. Everyone agreed that there were many possibilities and then Brad remarked that a way of tying everything together was to decide what the product of the coursework should be and he suggested that the students could exhibit something at the museum. Carl proposed letting the students visit the museum’s storage rooms and learn about how the objects were registered in Regin. The teachers did not know what Regin was so Brad explained it to them, saying in the same breath that there was not enough time in the coursework to do this. Selma replied that they wanted the students to use the museum as a work base part of the time, so Brad introduced the idea of working with historical sources in the archives, saying that tangibility and sense-stimulation were fundamental to a memorable learning experience. Selma replied that working with their own home region would make the coursework meaningful to the students and that it would also be good for them to get out and investigate their town. Brad agreed that it was important for the students to know about their roots and their own region. Selma continued that they could make sure there was a student from the town of Ashton in each group. For the next several minutes, Brad explained how the museum could contribute to this topic within both subjects (history and geography) while the teachers took notes. Carl remarked that when the students searched the database, they would come across familiar family and place names that would make history more personal for them. He also said that in order to understand the effects of changes in the town’s development, it was good to talk to people who had experienced them.

All of a sudden, the partners seemed more or less settled on the framework and content of the coursework and spent the rest of the meeting talking about what they needed to have ready for their next meeting, which they decided would be in September.

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1 Regin is a registration database provided by the National Agency for Culture to state-subsidized and state-owned museums
Brad said that if the teachers made an outline of what they wanted from the museum, the museum would fill in the content.

The meeting ended in pleasant small talk. Brad said he was looking forward to seeing the teachers’ plans, Selma replied that their talk at this meeting had been interesting and Vera added that many good ideas had emerged that could be used for future projects as well.

At the second meeting, in September, Mickey, one of the museum curators and the keeper of the archives, joined the collaboration. Carl had been asked to take charge of a different project. After introducing himself, Mickey asked about what kind of archival material the students needed him to find so he could have it prepared beforehand. The teachers presented the coursework as they envisioned it, including topics for each of the groups. The rest of the meeting was spent working out in detail what each group of students would need as well as the logistics of the week of the coursework. The atmosphere of the meeting was congenial and Mickey seemed to find his place in the group easily. He and Vera agreed to meet later so he could introduce her to the archives so she would be able to help him help the students while they were there.

At the museum

Due to teaching obligations in other classes, Selma did not have time to visit the museum with the 2t students during the week of their coursework. However, Vera accompanied the students most of the time while they were there. During the introductory visit to the museum, when they met Brad and he showed them the exhibits and the museum storage rooms and explained to them how a single museum object often contains many stories, Vera asked several elaborating questions. While the students worked in the archives, she answered any of the students’ questions about the coursework that Mickey could not answer. There were two groups working in the archives at a time so Vera’s presence and contributions were a support for Mickey, who was quite busy going from one group to the other to help them search the database. The introduction to the archives that Mickey had given Vera at their meeting seemed to pay off during the coursework.

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1 Vera was not the class’ history teacher so she and the students did not know each other.
Appendix Partnership Introductions and Field Notes

Shoresby Gymnasium and Shoresby Museum

The school
Shoresby Gymnasium is an upper secondary school that opened in 1980. There are approximately 550 students and approximately fifty-five teachers. According to the school’s website, it aims to qualify and inspire students to continue their education after graduating by providing them with a high-quality gymnasium education based on disciplinary breadth and depth. Furthermore, a goal is to prepare the students for life as citizens in a globalized, democratic society by qualifying them to exert influence, meet challenges and uphold community feeling.

The museum
Shoresby Museum was founded in 1977 as a self-governing museum. It was accredited by the state in 1984 and is under the jurisdiction of the Ministry of Cultural Affairs. The museum has more than 20,000 square meters at its disposal, including 6,500 square meters for exhibits. It is housed in the former power station of the Municipality of Shoresby. According to the museum’s website, there are ten regular employees, three of whom are academically educated. The museum’s focus, area of responsibility and activities cover manufacturing, living conditions and financial development after 1850. Approximately 40,000 people visit the museum every year.

At present, there are three academically trained full-time people on the permanent staff, one of whom is the director. At the time of the coursework in this case, there was a fourth.

The partnership
In 2008, Shoresby Gymnasium and Shoresby Museum joined forces and became one of the first five partnerships of the interface project. Since then, the two institutions have worked together many times to develop and carry out coursework for students within a wide range of subjects. Prior to this case, approximately 200 students from Shoresby Gymnasium had worked at the museum as a result of coursework produced by fourteen teachers, five museum staff members and a number of museum volunteers working together in various constellations. At the time of my research into this case, the partnership was in its third year of collaboration. The museum is 3.3 km from the school.

On the front page of the school’s website, there is a link to the interface website under the heading “The school’s external resources” but there is no mention of the school’s partnership with Shoresby Museum. Similarly, on the front page of the museum’s website,
there is a link to *intrface*. Furthermore, under the heading “Secondary schools”, also on the front page, there is a short description of *intrface* and an example of coursework developed by the museum and Shoresby Gymnasium plus a link to this coursework on the *intrface* website.

**Adult interviewees**

In the present case (Shoresby), two teachers, a museum educator and the director of the museum were interviewed\(^1\). The two teachers, Holly and Janine, were both experienced teachers with clear ideas of what they wanted the students to get out of the coursework. Holly’s subject was Danish, Janine’s Physics. For Holly, this was the first time she had participated in *intrface* work, but she was familiar with the museum and had met the museum director on a few occasions. Janine had worked with the museum within the *intrface* concept twice before, meaning that she knew several members of the staff and a few of the volunteers. She was one of the five teachers from the school to collaborate with the museum to produce the first coursework in 2008. At the end of the 2011-2012 school year, Janine left the school.

The museum’s education officer, Dean, was a young man who was relatively new on the job. Dean had been involved in previous collaborations with teachers from the school. This time, he became involved after the coursework had been agreed on by the two teachers and the director of the museum.

Oliver, the director, was one of the driving forces behind the entire *intrface* endeavor. He strongly supported the ideals behind the concept, he had worked together with the leader of the project\(^2\) (2008-2011). He was on the executive committee of the *intrface* association (2011-) as well as being a member of the management team. He had worked with Janine several times and was involved with this case at the beginning and end but was called away on other business while the students were working at the museum. This was when Dean was asked to take over.

**Students**

Holly and Janine both had 1.d as their class. There were twenty-six students, a majority of whom were girls. The day before their first visit to the museum, I asked the students to answer a list of questions about what they expected to get out of working at the museum. The day after the coursework was concluded, I asked the students to answer a number of

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\(^1\) There were a few other people involved in realizing this coursework, though more peripherally: two volunteers from the museum and the class’ history teacher.

\(^2\) I was the project leader.
questions based on the Generic Learning Outcomes. One month after the coursework was concluded, I interviewed four of the students, two boys and two girls.

The coursework

This is the chronology and content of the coursework entitled “The Industrial Revolution in Shoresby, focusing on technological development”.

On January 7, 2011, Janine sent an e-mail to Oliver and suggested that they worked together to develop coursework for at class of 1st year students.¹ In her e-mail, she told him that she and some of 1.d’s other teachers were planning to work with the industrial period in Physics, Chemistry, History and Danish. It is clear in the e-mail that the teachers had more or less agreed on the content of the coursework: how people got electricity, water and power and how this has affected people’s living conditions, comparing the industrial period with other historical periods. She asked him if they could meet on January 19.

On January 19, the teachers met with Oliver at the museum² to talk about how to put this coursework together. The teachers had already decided that the students must produce a piece of written work as one of their products, and the main topic of discussion at the meeting was how to incorporate this written product in a meaningful way at the museum. They agreed that each of the seven groups of students were to produce a large poster on cardboard illustrating and explaining their chosen exhibit at the museum. They would then use this poster as a basis for their oral presentation on the final day of the coursework, when the students’ parents would be invited to go on a guided tour from one group’s exhibit to the next. The teachers also asked Oliver about how best to organize the parents’ day.

A month later (February 23), as the first e-mail after the meeting, Janine e-mailed a detailed project description to Oliver. After this e-mail and until March 15, when the students visited the museum for the first time, there was very little e-mail correspondence between the teachers and Oliver.

The project title was “The industrial revolution in Shoresby, focusing on technological development” and there were eight topics: How does a steam engine work and what was its significance for factory manufacturing?; The fight between direct current and alternating current – and what is current?; Where did and does our heating come from?; Water works in Shoresby: what are and were their importance and where does and did our water come

¹ Earlier, she and Oliver had spoken about developing coursework entitled “What is electricity, really?”.
² I was an observer at this meeting. I had also been given permission to read all e-mail correspondence between the teachers and Oliver.
Appendix Partnership Introductions and Field Notes

from?; Factory manufacturing in Shoresby – the presentation of a factory; The history of gasworks and electricity works in Shoresby; Workers’ housing during the industrial revolution; and Social living conditions during the industrial revolution. Each participating subject contributed with a specific perspective on the coursework: History focused on the industrial revolution in Shoresby (1870-1900), incl. political, financial and social conditions; Physic focused on the development of the steam engine and power stations in Shoresby, direct and alternating current, hydroelectric power stations, electricity; Chemistry focused on electrochemistry – batteries, water purification, combustion reaction; Danish focused on language (oral and written) and how to make a poster.

The teachers prepared the students for their work at the museum for several weeks. Chemistry was dropped as a participating discipline. The three teachers worked independently of each other, having agreed that this coursework should be co-disciplinary and not cross-disciplinary. The students worked at the museum for two consecutive periods (2 x 90 minutes) on four days: March 15, 16, 21 and 31. While they were there, they interacted with Dean, the museum educator, Oliver, the director of the museum, one of the museum curators, the museum registrar, one of the museum Aunts, two volunteers (a retired engineer and an engineman) as well as with their teachers, Holly (Danish teacher), Janine (physics teacher) and their history teacher.

At 4:00 p.m. on the 31st, after the two periods of work, the students’ parents arrived and were taken in groups on a guided tour to all seven groups’ exhibits. After this, the students, their parents, the teachers and the museum professionals joined together for a social event with cake, soda, coffee and tea at the museum.

The coursework has been uploaded to the interface website.

My participation

I was privy to all e-mail correspondence but did not attend the planning meetings. I observed the students during their visits to the museum and on Presentation Day, when their parents came to the museum to see their presentations. While I was at the museum, I was also able to observe the on-site collaboration of the teachers and museum staff.

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1. d had a student teacher in Chemistry at this time and he felt that participating in this collaboration was more than he could cope with.

2. Twice a week, a “museum Auntie” at Shoresby Museum cooks historical dishes in the kitchen of one of the museum’s Workers’ Apartments. Museum guests can taste samples of these dishes and have a conversation with the Auntie about e.g. living conditions as a working family in the 1950s in Denmark.

3. Their history teacher was not interviewed.
Shoresby Field Notes
At 9:45 a.m. on a sunny, cold Tuesday in the middle of March 2011, twenty-eight 11th-year students from Shoresby Gymnasium arrived with their history teacher at Shoresby Museum. They were happy to get indoors. Their 90-minute visit on this day was organized as a guided tour led by Oliver, the museum’s director. Oliver introduced them to the museum by telling them about its ambition to disseminate knowledge about living and working conditions during the industrial revolution. He then took the class with him to the tenement building that housed the museum exhibits “Workers’ apartments”, in front of which he directed the students’ attention to the streets around the electricity works and then gave them some general information about Shoresby and about the tenement building, comparing both to other industrial towns and cities. The students were quiet and attentive.

Following this, Oliver took them inside to the oldest apartment first (1880s) and the students squeezed in to see it. He asked them how big they thought a grown man was at that time, a question which made the students giggle but none of them offered an answer. He continued to tell them about what it was like to live in an apartment like this, making a point of emphasizing the human angle of his interpretation and using objects to make his narration more concrete, e.g. telling them about the outhouse behind the house, about how ice formed on the bedding during winter and about how small children were put to bed in dresser drawers. He drew their attention to the double-glazed windows, telling them that authenticity must sometimes give way to considerations concerning the indoor climate of an exhibit. Oliver then took them to see the 1920s apartment, using it to show how living conditions had changed in the forty intervening years, specifically about women’s changed social status. The students were still attentive and two students asked Oliver questions. Their teacher stayed in the background.

After this, half the students went with the history teacher upstairs to see the maid’s room, and the other half went with Oliver to the 1950s apartment, which smelled of food and where there was a radio playing. The students reacted to this sensory input and became livelier and more actively curious. They also became less reserved with Oliver and several of them asked him questions.

All of the students came together in the 1970s apartment and some of the students started complaining about it being so crowded while others thought it was fun. Some of
the students’ attention was wandering. Some of them went to see the 1998 student’s digs on the top floor, where they felt quite at home and immediately started handling objects.

When they left the Workers’ apartments, and on their way to the printing works exhibits, two of the boys wanted to stop and try out the museum’s stilts. The history teacher shoed them on. At the exhibit of the lithographic printing works, Oliver passed around a lithographic stone for them to feel its weight but many of the students were not interested. It was a bit of a struggle for Oliver to keep their attention and the teacher stayed in the background.

The following day, Dean, the museum educator, was put in charge of attending to the students and their teachers. Oliver was away all day on other business. When the class and their teacher, Janine, arrived at noon, Dean went outside to meet them. He did not know what their agenda was, which surprised Janine, but she filled him in, and then they all went up to the museum’s lecture hall. The rest of their three-hour stay was spent working in groups; each group was responsible for one of the topics of the coursework. The groups’ work alternated between exploring the museum to find suitable objects or exhibits for their topic, asking Dean for help to find them and working on their computers. Several of the students met and talked with volunteers, e.g. the retired engineer, who told them about steam engines and offered to visit them at school if they had more questions, and the engineman, who started one of the steam engines so the students could study how it worked. Several groups found their way to the 1950s apartment, where one of the museum’s Aunts was cooking dishes typical of that period. She was happy to tell them about what it was like to live in an apartment like that in the 1950s. She mentioned to me after one group left that the students asked her many well-considered questions; she felt sure that their interest and attentiveness were especially motivated by the fact that they needed the information for their school project.

For about the first sixty minutes, the students kept busy and were concentrated on getting a good grip on their topic and how they wanted to present it, using an object or exhibit at the museum. They took pictures and asked Dean many questions. When they started working on their computers, the museum’s internet access only worked sporadically and only in certain areas of the museum, and this eventually caused quite a bit of frustration among the students. Dean was unavailable, as he had to attend a meeting so the problem could not be addressed. At 2 p.m., an hour before the visit was scheduled to be over, Janine dismissed the groups whose work could not be done without using the
internet. She was unhappy about this because she had told the students that they could access the internet at the museum. She also said to me that coursework like this worked better when the students did not have lessons at school on the days they were at the museum and did not have to spend time travelling back and forth between the two. After Janine’s comment, I wrote in my notes, “There was only one meeting between the museum and the school before this coursework. Not enough perhaps.”

On the third day, the students were at the museum from 9:45 a.m. until 1:30 p.m., during which time Oliver and especially Dean were available. Oliver sorted out the internet problems by inviting the students to move tables and chairs into the areas where the internet access points were strongest.

Dean was often sought out by students who wanted help, and he was very accommodating. The museum registrar also became involved and helped the students interpret a technical drawing they had found on the internet. From 11:00 to noon the students were assembled in the lecture hall where they worked on their posters and presentations. They were busy but also enjoyed themselves, taking a break when it suited them, walking down to the exhibits to look at them again and visiting with other groups. Janine was very happy afterwards because the students had made good progress and she felt that the museum professionals had been more available and helpful than on the previous day.

At noon 1d’s Danish teacher, Holly, arrived at the museum. She had called the museum curator the week before and asked him if he could give the students a talk about the museum’s dissemination methods. He took her and the students to the 1880s Workers’ apartment, where he had placed a large wall poster from the museum’s Savings Bank Exhibition. In his talk to the students, he used this poster and the apartment and its contents as examples of how the museum disseminates knowledge. Holly contributed to his talk several times by drawing the students’ attention to how what he said coincided with or complemented what they had learned in their Danish lessons at school. Holly and the
museum curator came across as being equally invested in this talk and as being equal in expertise. The students applauded enthusiastically when the talk was over.

**Presentation Day**

Ten days later, on March 31, the students spent three hours at the museum in the afternoon putting the final touches on their posters and stands and practicing their oral presentations in anticipation of their parents’ arrival at 4:00 p.m. I have no notes from this day but a great many photographs.

The students were very busy and many of them were quite nervous. Holly and Janine were there and assisted the students when necessary. Oliver and Dean listened to some of the groups’ presentations and made suggestions about how to improve them. Oliver helped one group organize its stand.

At 4:00 p.m. the students’ parents (and some siblings) started arriving, gathering in the Engine Hall of the museum. A few minutes later, two of the students stepped forward and opened the Presentation Day officially, welcoming the parents to the museum and explaining how the afternoon was organized. During their short introduction, more parents arrived. The museum director went back and forth between the Engine Hall and the entrance to the museum, making sure that the guests knew where to go.

One of the things I noticed when I, like the parents, went from one group to another to listen to the presentations and see the posters was that most of the groups did not incorporate the museum’s objects or setting in their presentation but based their presentations on the posters they had made. Nor did they actively draw their listeners’ attention to the museum setting. On many of the posters, there was a lot of text written either by hand or in a small typeface, which meant that the audience could not read it unless they were standing right in front of it.
After the 1d groups had presented their topics, many of the easels with posters were moved to the Engine Hall, where parents could stand close to them and read the texts.
Appendix Partnership Introductions and Field Notes

Cranwell and Shoresby Museum

The school

Cranwell is a new, very large school in Shoresby. It was established in 2011, merging several other schools, colleges and professional training centers. According to the school’s homepage, their vision “is to create a school with growth and development that ensures new and future-oriented education and training opportunities.” There are about 2,500 students enrolled at the school, which employs approximately 315 people. One of the educations the school offers is the HHX Commercial Gymnasium, which is where the students and teachers in the Cranwell case were from.

The museum

The museum in this case is Shoresby Museum, the same museum that collaborated with Shoresby Gymnasium. Please see the information about the museum in the presentation of the Shoresby case above. The museum is 1.2 km from the school.

The partnership

Teachers from Cranwell had visited Shoresby Museum with students several times prior to the collaboration of this case, but this was the first time the two institutions collaborated within the interface concept. Cranwell is thus a first-year partnership. Four teachers chose to participate, two of whom are interviewees in this case. Of the two, especially one was responsible for collaborating with the curator from the museum.

In the fall of 2011, the director of the museum, Oliver, asked to speak at a teachers’ meeting at the HHX gymnasium. At this meeting, he told the teachers about the museum and how it was relevant to use in connection with a wide range of disciplines. Following this, a second meeting was set up, at the museum, where the school principal and a few other representatives from the school met with Oliver and Christian to discuss possible projects. Christian was to be the museum’s representative in this collaboration, and work together with the teacher(s) appointed to the project by the school management. Liz was the teacher Christian worked with most. Later Pia joined the collaboration, and both Pia and Liz spoke so warmly about the project while it was still in its planning phase that two other teachers also wanted to do the coursework. These two teachers were peripheral during the planning of the coursework. They did, however, participate in the evaluation meeting held at the school in November 2012.

1 The school’s name is a pseudonym so there is no link.
Appendix Partnership Introductions and Field Notes

Besides developing and carrying out the Innovation coursework, the aim of the collaboration, at least as far as the museum was concerned, was also that Cranwell would become a member of *intrface* as well as a sponsor of the museum.\(^1\) There is no mention of the collaboration on either of the institutions’ websites; Shoresby Museum links directly to *intrface* on the first page of its website.

*Adult interviewees*

Liz was the teacher Christian, the museum curator, wrote to following Oliver’s meeting with the school’s management to initiate a collaboration. A few months later, Patty joined the project. Patty and Liz were both experienced teachers.

Christian had not been directly responsible for any *intrface* collaboration prior to this case though he had participated as a museum educator several times in other *intrface* coursework. He had recently finished his PhD dissertation and was organizing further research within his field. Christian was an experienced curator, researcher and educator. His was also part of the management team at the museum.

*Students*

Five classes completed the coursework designed by Liz, Christian and Patty. There were four 3rd year classes and one 1st-year class. Class size varied but averaged about twenty-two students. Although only two classes are relevant in this case, the fact that so many students were at the museum in such a short time (one week) was a factor that influenced the teachers’ and Christian’s collaboration, the in-house collaboration at the museum and the students’ learning outcomes. The number of students in the classes is greater than the number of students who answered both pre- and post-survey.

*The coursework*

At Shoresby Museum, there are two tenement buildings with five apartments displaying how working families lived at different times from 1880 to 1998. These apartments are completely accessible to the public: One may sit on the chairs or at the tables, one may touch the objects, etc. The museum also has an exhibit called The Wardrobe, which i.a. has copies of historical clothes made up for guests to try on. Another exhibit, in the museum’s lecture hall, displays telephones from the 1890s until the present day and yet another exhibit is the 1950s Street, displaying i.a. shops, a barbershop and a telephone exchange. These exhibits along with the possibility of dressing up in The

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\(^1\) Cranwell has since become a member of the *intrface* association but there is no reference to the partnership with Shoresby Museum or to their *intrface* membership on the school’s website.
Wardrobe’s costumes were what Liz and Christian, and later, Patty, decided to use as the framework of the coursework for the discipline Innovation.

The first meeting between Christian and Liz regarding the coursework took place in December 2012, after which there were several meetings from February to May 2012. E-mail correspondence was regular between Christian and Liz and later Patty. I participated in the first few meetings in an advisory capacity, e.g. making suggestions about how to organize the coursework. However, when Patty became involved after the first few meetings, I became an observer only.

The partners settled on dedicating eight lessons (of sixty minutes) over a period of three to four weeks to a project called “Innovation: focusing on telephony”. Added to this was the students’ homework, i.a. visiting the museum on their own to prepare and improve their products. The first two lessons were spent on going through chapters 1-9 of the students’ Innovation textbook. In lesson three, Christian gave a lecture at the school, for all five classes, about telephony and about telephone manufacturing and sales in Shoresby. Four of the following lessons took place at the museum, the last two of which were spent listening to the students’ presentations, watching their videos and giving them feedback.

In each class, the students were divided into six groups. Five of these groups were each assigned a historical period to work with, corresponding to one of the workers’ apartments. The sixth group was assigned The Future, and worked in the museum’s lecture room. Each group’s task was to produce a short video depicting how telephones influenced working people’s everyday lives, and using the apartments and the 1950s Street as their setting as well as dressing up in historically correct costumes from The Wardrobe. The students working with The Future could use the telephones exhibited in the lecture room as their context. There were also written assignments, e.g. many of the students wrote short papers answering questions about how to apply the subject’s theory to what they learned at the museum and during Christian’s lecture.

As a way of motivating the students, Liz and Christian decided to give the best video in each class a prize. The teacher of a given class and Christian judged each video according to a set of parameters, e.g. its length, how well the museum context was incorporated in the video, the correct use of certain theoretical concepts, etc. Furthermore, the videos produced by all five classes were uploaded to a Facebook group started by Liz. The students were encouraged to watch each other’s videos and “Like” the ones they thought

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1 The e-mail correspondence was made available to me.
were best. The number of “Likes” a given video received counted in its favor after the teacher and Christian had agreed on which video they judged best. The number of “Likes” was the deciding factor if two or more videos were judged to be equally good.

A further motivation for the students was that Christian announced that the best video for each of the five workers’ apartments would be used as part of the museum’s digital presentation of the apartments, meaning that these videos would be seen by an authentic audience outside of school. To find the most suitable videos, Christian enlisted the help of Dean, the museum educator. As yet these videos have not been made into Apps, from all accounts due to technical difficulties converting the video format to a format the museum can use for its Apps.

The coursework has not been uploaded to the interface website.

My participation

As mentioned earlier, I participated in an advisory capacity in the first two planning meetings. At later meetings, I made a point of only observing. I was also present as an observer when the students were working at the museum and when they presented their videos and was a member of the Facebook group, where the students could watch and vote on the other groups’ videos. I have very few field notes from the partnership meetings. I was also present as an observer via Skype during the partnership’s evaluation meeting.

Note regarding the interview with four students from 3oc:

When I was interviewing the four students from 3oc, the Dictaphone I was using to record the students’ responses broke down after approximately three minutes. About fifteen minutes passed before this was discovered, so these fifteen minutes are missing from the interview and could not be restored. After the technical problem was solved, the interview was resumed. I asked the students if I could send them an e-mail with the missing questions, which I did after listening to the interview and finding out what was missing. As only one of the four students answered the e-mail, I chose to restrict myself to the proper interview data.
Cranwell Field Notes

On February 2, 2012, Christian and Liz held their first official planning meeting to start the development of their first partnership coursework. At this point, Christian and Liz saw their collaboration as part of a larger collaborative project which was to develop the content of one section of a permanent exhibition at the museum called “Advertisement and Branding,” which was being planned at the museum. The idea was that one part of the exhibition would be targeted commercial and vocational students, who, as part of their coursework, could be put in charge of interpreting it for visitors and other students. The specific goal of this meeting was partly to agree on the basic content of that special section of the exhibition and partly to decide how Liz’ students could contribute to that content and fit it into the larger goal related to Advertisement and Branding. Liz and Christian agreed that the three subjects contemporary history, marketing and innovation would be relevant in this context and decided that the (historical) local manufacture of telephones and radios would be interesting and challenging subject-matter. Work clothes design and manufacture were also considered as subject-matter. Christian and Liz also agreed on a time frame for their future meetings and for the when the coursework would be implemented. The coursework was to be finished by the end of the school year 2011-2012 and carried out at the beginning of the next school year, in September 2012.

I do not have field notes from the second meeting, which took place at the end of March 2012.

On May 9, Patty joined the collaboration. Patty wanted to participate with two classes and she and Liz knew of two or three other teachers who also wanted to participate with their classes. It had been decided that the subject of the coursework would be innovation and the Workers’ apartments would be the physical setting. The focus of the coursework was telephones and the development of telephony and how this influenced people’s everyday lives. The apartments symbolized chronological stages of development and the question for the students to answer was what technological innovations in telephony were necessary to get from one to the next. They also discussed practical questions about how often and when the students could visit the museum and what the product of the coursework should be. Christian said that the students could come and go as they pleased.

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1 As mentioned earlier, I played an active role at the first few planning meetings.
2 From this point forward, I was an observer only.
Appendix Partnership Introductions and Field Notes

outside of the scheduled visits and they agreed that the students would be very motivated if their products were judged and prizes given to the winners.

3oc Cranwell
On September 10, 2012, Patty and the twenty-three students from her class, 3oc, arrived at the museum. The students only had one hour to work there. When I met Patty outside the main entrance, where she was standing with four boys from the class, she seemed rather stressed. The boys had already finished filming so they did not really have anything to do. The rest of the groups were busy with their projects; they had started working as soon as they had arrived and before Christian had a chance to greet them. Most of the students had already visited the museum on their own to get a head start on their work. Many of them had been to the Wardrobe, where they borrowed costumes or rather clothes that matched their group’s historical period. The women at the Wardrobe helped them find appropriate clothes, also giving them information about the fashions of the various historical periods.

I walked over to the Workers’ apartments and found a group of boys in the 1950s apartment, one of whom was eating a sandwich from his packed lunch at the table. Another boy took the life-sized man doll out of the bed and danced around with it. Patty came in and asked me what I was writing down and I explained. She put the doll back on the bed and straightened the bedclothes. Christian came in and made a comment about the boy who was eating but he did not actually object to it. Then he left.

The boys asked me what I was writing down and once again, I explained that I was writing down what I observed, e.g. that I noticed the one boy was eating real food at the exhibit table. They asked me if that was bad and I answered that I was just observing from the sidelines and had adopted a neutral position. Then Kathleen from the Wardrobe turned up, tidied up the bed and noted that the boy was eating at the table but made no remark. I went outside the apartment door and
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sat on a chair to continue writing. The door was closed and after a short moment I heard raised voices and bumping sounds, so I went in and saw that the boys had taken the doll out of the bed again. I put my “neutral position” aside and told them to put the doll back on the bed and leave it there. Shortly after, one of the boys came up to me and asked me some things about the apartment, possibly to make me think that they were working seriously. I moved into the kitchen to continue writing and I could hear them joking around and talking about things that did not have anything to do with the coursework.

In the 1970s apartment, three girls, who were dressed up in clothes they had borrowed from the Wardrobe, were playing around with the shoes from the closet in the apartment but they tidied up after themselves.

Another group of girls who were filming at the top of the stairs in the building wanted the boys downstairs to be quiet. After some cheerful bantering, the boys went back inside “their” apartment.

Joe Cranwell

On September 14, Liz and fifteen out of a possible twenty-two students in 3oe turned up at the museum an hour before the agreed time, and were scattered to the four winds at the museum before Liz called me to let me know that they were there. On my way over to the Workers’ apartments, I ran into Christian and told him that he should have called me so I could have been there from when the students arrived. I asked him if the students had been assembled and he had greeted them before they started their group work and he answered yes, sort of, in the Engine Hall, where all sorts of other museum activities involving other guests were under way.

Liz told me that the fifteen students were filming or getting ready to film in the three of the apartments. I did a head count and found out that there were only nine. The 1920s group was comprised of three girls who were wearing their own clothes. Other museum guests came in and walked around in the apartment while the girls were there.

There were three boys in the 1970s apartment, one of whom was dressed in clothes (a skirt and blouse) from the Wardrobe. They two other boys were discussing how to make the film and what lines Paul, the boy who was dressed up, should say. There was a lot of joking about a pipe Paul was pretending to smoke. The two other boys kept discussing what he should say and telling him what to say and he got rather confused and kept making mistakes. Then the two other boys started talking about how long this scene should be
after which they got back to telling Paul what to do and say. When Paul finally got his lines right, the mood lifted and they seemed satisfied.

In the 1990s Students’ digs, there were three boys who were in the process of deciding how to make their video. They were having fun as they looked around the room to get an idea for a telephone conversation, which was part of their sketch. The boy holding the telephone was dressed in clothes from the 1990s, borrowed from the Wardrobe, and he was enjoying being the “actor” in their sketch. There was an empty pizza box in the wastepaper basket under the desk, so they decided that ordering a pizza over the phone would be a relevant activity for the actor to perform.

They told me that they thought the museum should put a telephone book in the exhibit.

At 12:45 I walked over to the lecture hall to find Liz and make an appointment for our interview. Liz was not there, but there were two girls from the Future group taking photos for still pictures in their video. Kathleen from the Wardrobe came into the room and wanted the girls to go somewhere else because she had to set the tables for a book reception that was to take place later that afternoon.

Later, in the 1890s apartment, there were now five girls, two of whom were dressed in Wardrobe clothes, talking about how to make their video about a female switchboard operator. They started discussing what women wore in the 1890s and tried to think historically. They remembered hearing Kathleen say that women’s necks and throats had to be covered and that a switchboard operator had to be dressed in black and that women’s hair was not left hanging loose and was covered when they went outside. The girls were enjoying themselves and giggled a lot. Two of the girls went into the kitchen of the apartment and pretended to be cooking, e.g. stirring in a big pan on the stove. The other girls put up the “telephone operator’s” hair to make it look right for the video.

**Video presentations – Cranwell**

On September 25, a cold, rainy day, both of Patty’s classes were scheduled to present their videos in the lecture hall at the museum. The first class arrived on time and sat around in the hall, waiting to be told when to start. Patty was not there yet as she was out buying
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candy for as a prize for the best videos. The museum’s speakers had been moved somewhere so I called Patty and asked her if she could find speakers to bring to the lecture hall. She said she had some at home and that she would bring them. She asked me to tell the students to brush up on their presentations in the mean time. Christian stood up and welcomed the students, saying he was looking forward to seeing their videos and hearing how they presented them. Patty arrived with the speakers, which were hooked up. Two of the groups in this class had not done the work and had nothing to present.

Cranwell’s head of communication sat through the first class’ presentations, taking many notes. She was planning on writing a story about their project at the museum for the school’s website. After the first class had left, she asked Patty and Christian some questions, i.a. she wanted to know how long the students had spent on this coursework and on making their products and Patty told her, saying that they had also worked in their spare time. Christian said that editing the videos had caused some problems for some of the groups. Patty said that the coursework had been motivating for the students and that they had also written a paper about innovation in which they used Christian’s talk at the beginning of the coursework week.

At 10:30 half of Patty’s second class, 3oc, showed up. Over the next ten minutes, most of the rest of the class arrived. Christian told them they could spend a short while getting ready for their presentations. Five minutes later there were still a few students missing so Patty left to look for them. Finally everyone was assembled and Christian reminded them about how their videos and presentations would be judged. He also said to them that he was happy to have them at the museum.

All of the groups in this class were well-prepared, and after their presentations, they were sent out of the lecture hall. Patty said that she thought it was too difficult to decide which group should win and left it up to Christian. He ended up with two that were equally good, so they decided to let the number of “Likes” from the coursework's Facebook site determine which of the two should win. The students were called back and applauded enthusiastically when the winning group got their prize and diplomas. They appreciated Christian’s feedback even though he did not have time to talk about each of the videos.

A few days later, on Sept. 28, Liz’ class arrived in the lecture hall to present their videos and Christian said hello and reminded them of the judging procedure. The students were very noisy and talked during Christian’s introduction but he ignored them and just spoke louder. Liz was not there but as soon as she got there, the first group presented their
video. She told the class to be quiet. During the ensuing presentations, Liz had to tell the students to be quiet several times. They were only quiet for a few moments and then started talking again. Especially the boys were noisy and kept making comments about whichever group was presenting. One of the girl groups had trouble getting their video to work and the boys shouted at them, flustering them even more. The class grew increasingly restless and it turned out that two of the groups did not have anything to present.

When the presentations were over, Christian sent the students outside for ten minutes. He and Liz talked about which video should win and Liz agreed with whatever Christian said. She did make a point of saying that one of the videos was so bad that it would receive a failing grade. She wanted Christian to give the students feedback, which he agreed to do.

When the students came back, he talked about each video, including the video that “failed”. The students seemed bored and uninterested and there was some grumbling about the video that won. All in all, being in and with this class seemed like a trial for everyone involved.

I did not observe the two other classes’ presentations.

**Partnership evaluation meeting**

On October 23, Christian, Liz, Patty and the two other teachers met at Cranwell to evaluate the coursework. As I was at the University of Leicester at the time, I observed the meeting via Skype. Due to a poor connection and repeated Skype crashes, my notes of this meeting are sketchy, so the following is a summary of a combination of these notes and Christian’s minutes from the meeting.

There was much laughter and joking during the meeting and the partners congratulated each other on the success of their collaboration. Liz, Patty and Christian were satisfied with the way their plans had developed and the teachers felt that the students had been interested in the coursework. They agreed to repeat the coursework in September or October of the following year, with a few adjustments. Christian said that it would be difficult to carry out with more than five classes and that it would be a good idea to spread the visits out across a longer period of time. One of the teachers said that the students had gotten a lot of ideas from seeing other groups’ presentations and videos. She also said that the students had gotten a more nuanced impression of the museum and what it had to offer. Christian said that he thought that it was important that the students worked more with history as part of their innovation subject.

They agreed to make the following adjustments to the coursework the next time:
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1) Telephony was still to be the theme of the coursework, but all groups were to have a historical point of departure, i.e. there would be no Present or Future group. Possibly it would be a good idea if all the groups started out in the same historical period.

2) Each group would be given a Resource Box with weekly magazines, a book of statistics and a movie from the historical period they were working with.

3) The groups would be encouraged to ask their history teachers or Christian for help if they needed to know more about their historical period.

4) The students would be allowed to borrow clothes from the Wardrobe but it would have to be agreed upon beforehand when they would be there.

5) The students would be required to make a storyboard for their video after their first visit to the museum and make a list of the objects they would need to use. The storyboard must be approved by their teacher and / or presented to the rest of the class.

6) There would be separate product requirements for the video and the presentation. The video’s audience would be the museum’s guests, so it would not be necessary for the video to mention theory or concepts regarding innovation. The audience of the oral presentation would be the teacher and the rest of the class, and the presenting students would have to demonstrate subject-related knowledge.
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Westby Gymnasium & HF and Westby Museum

The school

Westby Gymnasium & HF is a relatively large school with approximately 925 students, eighty-five teachers and twelve administrative or technical employees. It was built in 1972, modernized and renovated in 2003-2005 and in 2011, a new sports hall, an auditorium and new classrooms were added. It is located on the edge of Westby. According to the principal’s introduction to the school on its website, its social and educational environment is based on diversity, tolerance and mutual respect, ensuring academic development, friendships and a good working climate. Three key characteristics of the school are diversity, a strong educational profile and a challenging academic environment.

The museum

Westby Museum is a branch of Coastal Museums, which is a large museum comprised of four recently merged smaller museums on the west coast of the mainland of Denmark. Westby Museum is a cultural history museum with a wide diversity of exhibits, e.g. about the town of Westby in the first half of the 20th century, about its harbor, about the Westby area in prehistoric times and about amber. It is the branch of the Coastal Museums that the students visited.

Westby Museum was established in 1941 and was moved to different addresses in Westby several times during the first couple of decades. In 1985, the museum settled at its present address and is now housed in what used to be the town’s central library. Approximately 10,000 people visit this branch of Coastal Museums every year.1 The museum is 3.7 km from the school.

Coastal Museums taken as a whole has as part of its permanent staff seventeen full-time, academically trained people, who can be moved from one branch of the museum to the other when the need arises.2

The partnership

On August 31, 2011, inface was started up as a project in the Region of Southern Denmark. However, Coastal Museums was not among the first five partnerships that attended the kick-off meeting, and did not join until February 2012. The partnership is thus

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1 This information was written to me in an e-mail from the director of Coastal Museums Aug. 7, 2013.
2 These figures were supplied by a museum curator at Coastal Museums (Sept. 1-3, 2013). Of the seventeen employees, eight are archaeologists.
the youngest of the partnerships of the five cases of this study. Of the five cases, it is also the collaboration of which I have the least firsthand knowledge.

The director of Coastal Museums is the chairman of the board of directors at Westby Gymnasium & HF, and it was due to his initiative that the partnership with the gymnasium was established.1 He did not participate in any of the partnership meetings but kept abreast of its development through meetings with Angelina, an academic assistant at the museum at that time who was in charge of the museum’s contributions to the collaboration.

Shortly after Easter 2012, the first partnership meeting was held at the museum and by the end of May, an outline for the coursework had been drafted by Nash and Angelina and the curator from the museum who was attached to this project. In July, the title of the coursework, the subject (A-level Chemistry), what students would be involved and the museum’s role in this coursework2 had been established. The final details were organized in August right after school started after the summer break and the coursework itself started in the middle of September, when Nash’s class visited the museum.

Angelina was responsible for meetings with Nash and organizing all the practical aspects of the collaboration. She enlisted the help of one of the museum’s curators to give the students a talk about archaeology and archaeological techniques used to analyze phosphorus content in soil samples. Furthermore, she made it possible for the students from Westby Gymnasium & HF to borrow certain objects to show at the annual Science fair held at the school, where junior high students are invited to attend and learn about different science subjects at gymnasium level.

Mention is made three times of the museum’s collaboration with the school and its interface membership in Coastal Museums’ annual report 2012 but not on its website. Nor is there mention of the partnership or interface on the Westby Museum branch’s website. The same is true of the school’s website, where neither the coursework nor the partnership with the museum is mentioned.

1 Coastal Museums also initiated a collaboration with the technical gymnasium at Westby Center School in Westby. Originally, I had hoped to include this collaboration and its coursework as part of the Westby case, but it proved difficult to organize visits and the post-survey online questionnaire, so that ambition was abandoned. A third collaboration with a teacher from Westby Center School and a teacher from Westby Gymnasium & HF was also initiated, resulting in coursework about Westby Harbor for 1st year students from both schools. This coursework was carried out too late (early 2013) to be considered as a case in this study.

2 An e-mail sent July 19, 2013 from the director of Coastal Museums to interface management makes it clear that the development of the coursework is complete. In the e-mail he also mentions the museum’s collaboration with Westby Center School.
The adult interviewees

Nash was an experienced teacher who recognized the pedagogical potential of working with the museum for his students. He had not previously collaborated with the museum or visited it with students.

At the time of the interview, Angelina had worked at the museum for about a year. She had been hired as an academic assistant and worked in the museum’s education department. She was later promoted to museum educator, at the same level as museum curators.¹

The students

The students in this case were 3rd year students who had A-level Chemistry as part of their specialized study program.² They knew each other very well as they had been classmates for three years. It was a small class of eight students and only seven answered both pre- and post-surveys. They were very interested in Chemistry and were quite excited about the coursework because they felt that they were able to use what they had learned in the subject in an authentic context and that their results were important for an “authentic” audience and not just their teacher.

The coursework

The coursework is called “Soil Analysis”. According to the teaser on the partnership’s Courses of Study page on the intrface website, the coursework “gives the students the opportunity to work closely together with Coastal Museums as a knowledge-based cultural institution. The students are given the opportunity to test the scientific, archaeological methods used by the museum to create new knowledge by means of phosphorus tests and analysis.”³

The students completed a course of study where theory and practice received equal attention. They were introduced to the intrface concept, and were given some suggestions about how they could use the museum. At school they learned about key theoretical scientific concepts. Later, they were given a lecture at the museum about phosphorus testing by a museum curator, who introduced them to how knowledge about people of

¹ In this study, Angelina is referred to as a museum educator.
² For a very brief description of what is meant by a specialized study program, please see http://eng.uvm.dk/Fact-Sheets/Upper-secondary-education/The-Gymnasium-(stx) (Accessed Aug. 7, 2013)
³ My translation. The teaser can be found – in Danish – here: http://www.intrface.dk/?partnerskab=54&resource=89&. You must be logged in to see the rest of the coursework. (Accessed Aug. 7, 2013)
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earlier times is generated from tests of this sort and how these tests are carried out. They were then given samples of the museum’s own phosphorus tests including soil samples, and asked to repeat some of the tests to see if the techniques that had been used and the test results were scientifically valid and correct. After the students had worked with theory and practice, they were asked to write a formal, scientific report containing i.a. a discussion of their findings. The museum asked to be given a copy of all the reports to keep as part of their collection. Furthermore, the museum planned to publish some of their findings on the museum website.¹ This was a motivating factor for the students as their work would be taken seriously and put to authentic use.

Early in their collaboration, Angelina and Nash agreed to organize and standardize the coursework in such a way that it could be re-used by other teachers and places of education without requiring too much adaption or alteration. Another goal was to ensure that the students would make use of the museum in a variety of ways in order for them to experience the potential of the museum as a learning resource. A third goal was that the coursework should encourage dialogue between the students and the museum as well as ensure the students’ active participation throughout the process.

My participation

As mentioned earlier, I did not attend any of Angelina’s and Nash’s planning meetings nor observe the students at the museum. I met Angelina, Nash and the interview students on the day I interviewed them.

¹ At the time of writing, there is no mention of the students’ reports on the museum’s website.
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Chapter 1 – NONE

Chapter 2 Research design – why a mixed methods approach?
Fig. 2a Model of Ph.D. focus

Fig. 2b The mixed methods process
Chapter 3 Methodology

Fig. 3a: Etienne Wenger's components of a social theory of learning
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Chapter 4 Methods
Fig. 4a Pre-survey questionnaire

Pre Survey

Dear Student!
Your answers to this questionnaire will be used as data in a PhD project. Similar data will be collected from students at other schools in Denmark.
In order for the results of the data processing to be as representative as possible, it is important that you answer all the questions, and that you answer them honestly and carefully.
You will be asked to answer another questionnaire at a later date.
Information pertaining to your name, gender, age, class, etc. will be made anonymous.

Your whole name

Gender
  Boy
  Girl

Age
  15
  16
  17
  18
  19
  Other

Name of School
Name of class
Grade
  1st year
  2nd year
  3rd year
  other

Name of museum

Has time been spent in class preparing your visit to the museum?
  Yes
  No
  Do not know

If you answered yes to the previous questions, what preparations were made? (Tick the answer(s) that best describe how your visit to the museum has been prepared. In the box under this question, you can elaborate on your answers.)

Subject-related work in the subject(s) of the coursework
Reading texts from the museum during the subject-related preparations in class
Checking out the museum’s website in order to learn something about the museum
A visit by a museum interpreter, who sat in on at least one of your lessons
A visit and a talk by a museum interpreter, where he or she told you about what the museum does
A review of how one behaves when visiting a museum
Practical preparations, e.g. time tables and bus schedules

You can write more here

What three words do you think of when you come across the word “museum”?

What do you expect to get out of the coursework that takes place at the museum?
The following statements are about your EXPECTATIONS regarding that part of the coursework which takes place AT THE MUSEUM.
The statements are organized in sections A, B, C, D and E. Under each section there is a box where you may write comments to the statements and / or elaborate on your answers.
For each statement, put an X by the answer / answers that best describe what you expect to get out of the coursework at the museum. You must put an X for every statement.
Note bene: A museum object can be many things, e.g. stuffed animals at a natural history museum, steam engines and garments at a cultural history museum or paintings and sculptures at an art museum.

If you are going to visit an art museum, the words “museum object” in the following statements refer the works of art that the museum has in its collection.

If you are going to visit a cultural history museum, the words “museum object” in the following statements refer to the objects that the museum has in its collection.

IN SECTIONS A – E BELOW, EACH OF THE FOLLOWING STATEMENTS HAD FIVE POSSIBLE ANSWERS: VERY SURE, PRETTY SURE, NOT VERY LIKELY, NOT AT ALL, DO NOT KNOW. THE STUDENTS TICKED THE BOX OF THE ANSWER THAT BEST SUITED THEIR EXPECTATIONS.

A1 My knowledge of the subject(s) in the coursework will be increased
A2 My understanding of how the subject(s) of the coursework differ from other subjects will be increased.
A3 My understanding of how the subject(s) can be applied in practice will be increased.
A4 I will gain insight into how museum objects can be used to create knowledge.
A5 I will become aware of how knowledge is interpreted differently at school and at the museum.
A6 I will gain insight into how the museum functions.
A7 I will become more knowledgeable of the town and the local area.

B1 I will become more aware of how I can use museum objects to communicate subject-matter.
B2 I will become more confident when I have to explain the subject(s) to others orally.
B3 I will gain insight into how the museum presents knowledge about objects through exhibits.
B4 By working at the museum and with museum objects, I will become more aware of how I learn.
B5 I will become better at formulating subject-related questions by having to put them to museum employees.
B6 I will become aware of how I can use the museum in relation to school work.
B7 I will become better at working in groups.
B8 I will discover that our group work functions differently at the museum than it does at school.

C1 I will experience new things about my classmates.
C2 I will discover that the academic level at the museum is different that it is at school.
C3 My attitude to how I learn at school will change.
C5 I will discover new things about my teacher(s).

D1 Being at the museum will be inspiring to me when I do the coursework.
D2 I will discover that being at the museum makes it fun to do the coursework.
D3 I will notice that it is easier for me to ask the museum interpreter questions that my teacher(s).
D4 I will see that the subject-related quality of the products of our coursework is higher than if they were produced at school.
D5 It will be challenging for me to work with subject-related things outside the school.

E1 Being at the museum will motivate the groups as well as my classmates and me to behave differently than we would at school.
E2 We students will make an effort to make a good impression on the museum staff.
E3 I will be more likely to use the museum for school work after completing this coursework.
E4 I will be more likely to visit the museum in my spare time after this completing this coursework.

Thank you very much for your answers! Regards, Sally Thorhauge, etc.
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Fig. 4b Post-survey questionnaire

Post Survey
Dear Student!
Your answers to this questionnaire will be used as data in a PhD project. Similar data will be collected from students at other schools in Denmark.
You have probably answered one questionnaire for this PhD project already. The focus of the first questionnaire was your expectations regarding that part of your coursework which took place at the museum your school collaborates with.
The focus of this questionnaire is what your experience of what you got out of visiting and working at the museum. In order for the results of the data processing to be as representative as possible, it is important that you answer all the questions, and that you answer them honestly and carefully.
Information pertaining to your name, gender, age, class, etc. will be made anonymous.

Your whole name
Gender
Boy
Girl
Age
15
16
17
18
19
Other

Name of School
Name of class
Grade
1st year
2nd year
3rd year
other

Name of museum
Has time been spent in class reviewing your visit to the museum?
Yes
No
Do not know

If you answered yes to the previous questions, how has the visit to the museum been reviewed? (Tick the answer(s) that best describe(s) how the museum visit has been reviewed at school. In the box under this question, you can elaborate on your answers.)
Oral evaluation of the visit to the museum
Written evaluation of the visit to the museum
Doing school assignments that drew upon your experiences at the museum
Your teacher(s) has/have referred to the museum visit in class
Your teacher(s) has/have evaluated the assignments done at the museum
Your teacher(s) has/have remarked on the class’ behavior at the museum
A museum interpreter has visited the class and participated in an evaluation of the visit to the museum
You can write more here

What do you expect to get out of the coursework that takes place at the museum?
The following statements are about WHAT YOU GOT OUT OF the coursework which took place AT THE MUSEUM. The statements are organized in sections A, B, C, D and E. Under each section there is a box where you may write comments to the statements and / or elaborate on your answers.
For each statement, put an X by the answer / answers that best describe what you got out of the coursework at the museum. You must put an X for every statement.

A1 My knowledge of the subject(s) in the coursework has been increased
A2 My understanding of how the subject(s) of the coursework differ from other subjects has been increased.
A3 My understanding of how the subject(s) can be applied in practice has been increased.
A4 I have gained insight into how museum objects can be used to create knowledge.
A5 I have become aware of how knowledge is interpreted differently at school and at the museum.
A6 I have gained insight into how the museum functions.
A7 I have become more knowledgeable of the town and the local area.

B1 I have become more aware of how I can use museum objects to communicate subject-matter.
B2 I have become more confident when I have to explain the subject(s) to others orally.
B3 I gained insight into how the museum presents knowledge about objects through exhibits.
B4 By working at the museum and with museum objects, I have become more aware of how I learn.
B5 I have become better at formulating subject-related questions by having to put them to museum employees.
B6 I have become aware of how I can use the museum in relation to school work.
B7 I have become better at working in groups.
B8 I discovered that our group work functioned differently at the museum than it does at school.

C1 I have experienced new things about my classmates.
C2 I have discovered that the academic level at the museum is different that it is at school.
C3 My attitude to how I learn at school has changed.
C5 I have discovered new things about my teacher(s).

D1 Being at the museum was inspiring to me when I did the coursework.
D2 I discovered that being at the museum made it fun to do the coursework.
D3 I noticed that it was easier for me to ask the museum interpreter questions than my teacher(s).
D4 I saw that the subject-related quality of the products of our coursework was higher than if they had been produced at school.
D5 It was challenging for me to work with subject-related things outside the school.

E1 Being at the museum motivated the groups as well as my classmates and me to behave differently than we would at school.
E2 We students made an effort to make a good impression on the museum staff.
E3 I will be more likely to use the museum for school work after completing this coursework.
E4 I will be more likely to visit the museum in my spare time after this completing this coursework.

Thank you very much for your answers! Regards, Sally Thorhauge, etc.

Fig. 4c Interview guide, students

Date
School
Class
Names
Boys/Girls
Introduction to the group interview: what, how, why. The interview today is about deepening my understanding of your experience of being at and working at the museum for this project’s coursework.
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Your answers will be recorded and transcribed later. You may see the transcription if you want to. Your names will be changed but in my records I will keep your names so I can find my way around.

There are no right or wrong answers today.

It is important that you don’t all speak at once and that you speak clearly, etc.

I am in charge of asking questions, etc., but you are very welcome to comment on or ask about each other’s answers.

1. Introduce yourselves by saying, “My name is + your whole name + I am a student at --------- Gymnasium.” Then relate – very briefly! – your personal experience of the coursework that took place at the museum. We’re doing this so I have a voice and a name to go back to if I become uncertain about who is speaking when I am listening to the audiofile.

2. What do you remember best from the coursework that took place at the museum?

3. Was the museum curator’s understanding and knowledge of the subject matter different from your teacher’s? In what way(s)?

4. Is the learning that takes place at the museum different than at school? In what way(s)?

5. Tell me about the whole process of the coursework, step-by-step (the first visit, your days of work, the presentation / product, rounding off the coursework) as regards:
   - Your acquisition of knowledge: When did you acquire the most knowledge - in the group work, with your teacher or with the museum person? What happened – in detail, please – to cause this knowledge increase?
   - The improvement of your skills: describe your group work at the museum. Did you work together differently at the museum than you do at school, and if so, how? What caused you to work together differently? Did the nature of the product you had been asked to make influence how you worked?
   - Changes in or confirmation of your attitudes and values: Were you surprised by what it was like to work at the museum? Was it engaging? Academically inspiring and challenging to work at the museum? If your attitude towards the museum has changed from doing the coursework there, what was it at the museum that caused that change?
     Do you think you will visit the museum in your spare time in the future? Why or why not? What could be done to change that attitude?
   - Your enjoyment, inspiration and creativity: What made it enjoyable to work at the museum? How did using the museum (object or exhibit) as your “textbook” affect your product? What did it mean for your work and product that you were able to ask questions of the museum employee (and volunteer(s)) as well as of your teacher(s)?
     Did working at the museum make you more interested in the subjects of the coursework? If so, why?
   - Your actions, behavior and progression: You worked in groups at the museum. Was your group work different at the museum than it is at school? In what way? Did you notice that you or others in your group behaved differently in the group than they would at school? What might be the reason for that? Were there any changes in how your group worked together during the coursework both at the museum and the school? What might be the reason for these changes, if any?

7. Are there any other types of learning that describe what you got out of doing the coursework?

Thank you!
Fig. 4d Interview guide, teachers and museum professionals

Four areas of focus:
1. Learning environment at the gymnasium and museum, respectively
2. Learning: student, teachers, museum employee
3. Collaboration: two communities of practice, SWOT analysis (strengths, weaknesses, opportunities, threats) of
   - One’s own community of practice
   - The collaboration with the other community of practice
4. The Future: What can be done? What must be done? How?

Name, partnership
Subject(s) in the coursework
Class involved in the coursework (how many students?)
Tell me about what you remember the best from the coursework.
Why was this form and content chosen for the coursework?

1. Learning environment
   - How would you explain the concepts of formal and informal learning environment? And how are these things noticeable at the two institutions?
   - Was the students’ behavior influenced by their working in a different learning environment than their school? If so, how?

2. Learning
   - What did you expect that the students would get out of the museum being involved?
   - How do you understand learning?
   - Is learning at a museum different than learning in school? How?
   - Should the school and museum make a point of working together regarding learning?
   - How can the school and the museum work together regarding learning?
   - So what DID the students get out of working at the museum? Regarding : knowledge and understanding, skills, attitudes and values, enjoyment, inspiration and creativity, and activity, behavior and progression
   - How was the students’ learning influenced by your collaboration (teacher + museum person)?
   - What have you yourself learned from working with the other institution:
     In relation to the museum person / teacher?
     In relation to your colleagues?
     In relation to the students?
     In relation to the subject(s)? Didactically? Professionally? Attitudinally? About collaborating?
     Anything else?
   - Will you change anything in your professional practice henceforth as a result of your experience of this project?

3. The collaboration
   - What are the similarities and differences between the two institutions?
   - How would you characterize the collaboration between the museum and the school:
     During the preliminary planning (phase of development)?
     During the coursework at the museum?
     Afterwards? Any follow-up?
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- What were the most important causes of the collaboration’s success? Or lack of success?
- Do a SWOT analysis of your own institution in its capacity as a collaborative partner.
  - Strengths, weaknesses, opportunities, threats
- Do a SWOT analysis of the partnership.

Ideas for the future
What must be and can be improved?
How should the partnership be developed?
Does the museum have enough to offer to make it worth the effort to take the students out of school and visit the museum and work there?

Thank you!

Fig. 4e Codes used for student interviews in NVivo

GLO 1 Knowledge and understanding
GLO 2 Skills
GLO 3 Attitudes and values
GLO 4 Enjoyment, inspiration, creativity
GLO 5 Activity, behavior, progression
School learning compared to museum learning
Hodge-podge

Fig. 4f Codes used for teachers and museum professionals interviews in NVivo

Learning (teachers and museum professionals)
- Learning about oneself
- Learning about one’s practice
- Changing one’s practice
- Learning about one’s colleagues
- Learning about one’s partner institution
- Learning from one’s partner institution
- Learning about the students
- Enjoying oneself
- Explaining one’s practice
- Using coursework in exams

Learning – GLOs (students)
- GLO1 Knowledge and Understanding
- GLO2 Skills
- GLO3 Attitudes and Values
- GLO4 Enjoyment, Inspiration, Creativity
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GLO5 Activity, Behavior, Progression
Improved grades

Learning environment
Regarding a formal learning environment
Regarding an informal learning environment
Differences between institutions
Similarities between institutions

Collaboration
Description of collaboration
Motivation for participation
SWOT Strengths
SWOT Weaknesses
SWOT Opportunities
SWOT Threats

Researcher’s influence
Chapter Appendix

Chapter 5 – NONE

Chapter 6 – NONE

Chapter 7 Analytical tool #1 – The Generic Learning Outcomes

**Fig. 7a The Generic Learning Outcomes**

**Knowledge and Understanding**
- Knowing what or about something
- Learning facts or information
- Making sense of something
- Deepening understanding
- How museums operate
- Making links and relationships between things

**Skills**
- Knowing how to do something
- Being able to do new things
- Intellectual skills
- Information management skills
- Social skills
- Communication skills
- Physical skills

**Attitudes and Values**
- Feelings
- Perceptions
- Opinions about ourselves (e.g. self esteem)
- Opinions or attitudes towards other people
- Increased capacity for tolerance
Empathy
Increased motivation
Attitudes towards an organisation
Positive and negative attitudes in relation to an experience

Enjoyment, Inspiration, Creativity
Having fun
Being surprised
Innovative thoughts
Creativity
Exploration, experimentation and making
Being inspired

Activity, Behavior and Progression
What people do
What people intend to do
What people have done
Reported or observed actions
A change in the way people manage their lives

Fig. 7c The Contextual Model of Learning (Falk and Dierking)
Chapter Appendix

Fig. 7d Key factors that influence learning (Contextual Model of Learning)

- Personal context
  - Motivation and expectations
  - Prior knowledge, interests, and beliefs
  - Choice and control

- Sociocultural context
  - Within-group sociocultural mediation
  - Facilitated mediation by others

- Physical Context
  - Advance organizers and orientation
  - Design
  - Reinforcing events and experiences outside the museum
Chapter 8 Analytical tool #2 – Learning in communities

Fig. 8a “The duality of participation and reification”

![Figure 8a](image)


Fig. 8b “Dimensions of practice as the property of a community”

![Figure 8b](image)


2 Op. cit., p. 73 (my artwork)
Fig. 8c Wenger’s fourteen characteristics that indicate the formation of a community of practice
1) Sustained mutual relationships – harmonious or conflictual
2) Shared way of engaging in doing things together
3) The rapid flow of information and propagation of innovation
4) Absence of introductory preambles, as if conversation and interactions were merely the continuation of an ongoing process
5) Very quick setup of a problem to be discussed
6) Substantial overlap in participants’ descriptions of who belongs
7) Knowing what others know, what they can do, and how they can contribute to an enterprise
8) Mutually defining identities
9) The ability to assess the appropriateness of actions and products
10) Specific tools, representations, and other artifacts
11) Local lore, shared stories, inside jokes, knowing laughter
12) Jargon and shortcuts to communication as well as the ease of producing new ones
13) Certain styles recognized as displaying membership
14) A shared discourse reflecting a certain perspective on the world

Fig. 8d Wenger’s nine indicators of constellations of communities of practice
1) Sharing historical roots
2) Having related enterprises
3) Serving a cause or belonging to an institution
4) Facing similar conditions
5) Having members in common
6) Sharing artifacts
7) Having geographical relations of proximity or interaction
8) Having overlapping styles or discourses
9) Competing for the same resources
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Fig. 8e Kira S. King’s Partnership Structure Continuum

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<th>Facilitation</th>
<th>Cooperation</th>
<th>Partnership</th>
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<tr>
<td>Help each other</td>
<td>Know each other</td>
<td>Articulate common objectives</td>
</tr>
<tr>
<td>Adherence to one’s own institutional culture</td>
<td>Exploration of each other’s institutional culture</td>
<td>Creation of new, common institutional culture</td>
</tr>
<tr>
<td>The museum is separate and different from the upper secondary school</td>
<td>The museum AND the upper secondary school</td>
<td>The museum PLUS the upper secondary school</td>
</tr>
</tbody>
</table>

Fig. 8f Ane Hejlskov Larsen: Collaboration – three alternatives

**Collaboration Model**

**Beginning process**

1. Organizations agree on an exchange of tasks, each offering the other a product or service.
2. Organizations join forces (personnel get together) to plan and execute the design of a shared project. A “joint staff” system develops.
3. Organizations agree on projected results, outcomes, products, services. Shared goals are arrived at and an action plan outlined.

**Communication**

Communication roles are established and definite channels are created for interaction across the organization concerning the joint project. Many “levels” of communication are established, as clear information is the keystone of success in the effort.

**Resources / Ownership**

1. Both organizations contribute staff time, resources, and capabilities. This is generally defined during planning process.
2. Mutual funding is obtained, perhaps from an outside source, depending on nature of the institutions (private, public, nonprofit, international, etc.).
3. “We” process mode develops – system ownership.

**Requirements / Characteristics**

1. Both organizations expend much time and energy.
2. Both groups take action and risks.
3. Frequent meetings, large and small, are arranged.
4. Compromise is a necessity; various trade-offs are arranged.
5. A combined staff, perhaps even a staff trade or loan, comes into being.
6. Expertise of different kinds is contributed by each group (which is one of the primary motivations for collaborations).

**Leadership /**

1. Dispersed leadership is characteristic.
### Control

2. Responsibility is delegated. Individuals must be willing to use independent judgment about assuming responsibility.

3. Shared, mutual control is ideal. Shared goals provide the congruity to the effort.

### Rewards

Both organizations are able to share in a product or service that would not have been possible (or very researchable) as separate agents.

2. This shared product/service may be a release of a responsibility that neither one could have carried alone.

3. In the case of public service organizations, the public may gain greater benefit from the joint effort than each separate organization could have offered.

4. The product of the joint endeavor can sometimes lead to a permanent relationship, opining the way for further sharing and mutual benefits.

5. Each organization can experience an expansion of possibilities without having to “spread thin.”

6. Although more time, energy, and resources may have been expended, very often the same time, energy, and resources are ultimately conserved by shared effort. Duplication of services is sometimes eliminated while improving the quality of service.

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### Fig. 8g Shirley M. Hord’s Collaboration Model

### Four types of boundary learning

<table>
<thead>
<tr>
<th>Identification</th>
<th>Boundary crossing can lead to the identification of the intersecting practices, whereby the nature of practices is (re)defined in light of one another.</th>
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<tbody>
<tr>
<td>Coordination</td>
<td>Boundary crossing can also lead to processes of coordination of both practices in the sense that minimal routinized exchanges between practices are established, to make transitions smoother.</td>
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<tr>
<td>Reflection</td>
<td>Reflection is a more profound effect of boundary crossing. It is about learning to look differently at one practice by taking on the perspective of the other practice.</td>
</tr>
<tr>
<td>Transformation</td>
<td>In the case of transformation boundary crossing leads to changes in practice or even the creation of a new in-between practice, for example a boundary practice.</td>
</tr>
</tbody>
</table>

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### Fig. 8h Akkerman’s and Bakker’s four types of learning at the boundary
Fig. 8i Skype conversation with Etienne Wenger
Date: October 30, 2012
I: Interviewer

I: Etienne, I would like to ask you some questions about learning environments. But I'm going to tell you about my PhD first. A little bit about my research if that is okay.
WENGER: It's okay.
I: The focus of my project is something called "intrface"...

[I explain at length about intrface, the focus of my research and the Generic Learning Outcomes]

I: ... Then I also want to know, what I'm also trying to find out, is that if the partnership between the teacher and the museum interpreter, if that functions well, and if they've done well, I'm trying to find out if that might have any influence on how the students act or how they learn.
WENGER: You mean if the partnership affects how the students learn?
I: Exactly. Okay?
WENGER: Okay.

[I then go on to explain how I interview teachers and museum professionals, after which Skype crashes. When the connection has been re-established, I continue my questions]

I: ... I'm thinking that I will try to apply the concept of communities of practice to mainly, mainly to the partnership work. Between the adults. But what I'm thinking of is that I will also be talking about the learning environments, the formal and the informal learning environments. The first question I want to ask you, is whether learning environments and social systems that you talk about, are they more or less the same?
WENGER: Well. No. Because, I don't know what people mean by "learning environment", sometimes people think, like, Moodle\(^3\) is a learning environment, you know? So, Moodle is not a social living system, Moodle is just a platform, so it depends on what you mean by "learning environment", you know? If you think the world is a learning environment, then yeah. Very often in education, what people call a learning environment is a very constrained system that has nothing to do with a social living system, which is a complex landscape of practices, institutions, activities and so on. So, myself, I would like to keep the notion of learning environment for the more formal constrained system that people in education create for students. Now, what I find interesting in your project is precisely that you break out of the learning environment.
I: Exactly.
WENGER: And how you use the term learning environment, all learning takes place in an environment. True, you can say everything is a learning environment. But it's more useful to keep that term for the more formal system that education creates for students. Social learning system is more like a company could be a social learning system, if you see what I mean?

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\(^3\)Please see [https://moodle.org/](https://moodle.org/)
I: Right. Because this is - one of the things I am assuming is that the students’ learning is enhanced by the fact that they leave the formal learning environment and move over to the informal learning environment. And the museum is normally seen as a non-formal learning environment, where everything is free choice.

WENGER: Well, it’s fairly designed.

I: Yes, but how you, as a guest, move around in the museum, and what you decide to look at and what you -

WENGER: It’s mostly self-directed, unless you’re taking a tour or something.

I: Exactly. But these classes and the coursework that is developed for them, is not non-formal, because they have to do things. All right?

WENGER: Yes.

I: There are lots of the things from the school, the formal learning environment that are moved over into the museum environment. The fact that they come out of the schoolroom, and they’re moving around in the museum and they can actually touch things and decide for themselves how long they’re going to sit somewhere, or go somewhere, they can go outside if they like, they can come back in, whatever.

WENGER: It’s fairly free.

I: Exactly. And this, I think, enhances their learning a lot.

WENGER: Yes, okay.

I: So I was thinking, in that respect, a learning environment is not a social learning system. You cannot say that the museum as such is a social learning system, so the answer to that question is definitely no.

WENGER: Well, now if you think about the museum. You could look at the museum as a social learning system – like any organisation is a learning system. Is the board learning anything, what are the different practices, you know, accounting and display, and scientists. Now that would be one way of looking at it, but I don’t know if that’s the way you’re way of looking at it. Now it could maybe be interesting to look at it that way, do students have access to that?

I: Yes.

WENGER: Then it would be another way to use communities of practice. There are practices that the museum could give students a window into and do they get actually access to practices in a way that they couldn't in school, see what I mean?

I: Yes. A lot of the coursework that has been completed is actually about the museum as an institution. What is it that museums do, how do they work, how are they different from schools?

WENGER: To me, I would have to say that, that is the most interesting way to use the community of practice, in your project. It is to say, once you break down the wall of the school, do students get a more authentic access to practices like scientific practices, or museum design practices...

I: Exactly. They learn how to analyse exhibits, they learn about learning, which is a real important thing for students here.

WENGER: Yes.

I: ... If you were to look at a social learning system, this is one social learning system and this is another one, how do you delineate them?
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WENGER: Well, I delineate them more the way I delineate a community of practice, more from the description that people give rather than, because in some sense, you can always extend it infinitely, see what I mean?
I: Yes.

WENGER: So, for instance, with an organisation very often they put a boundary around the organisation, and at that boundary there are certain practices that interact. So, in an organisation you would see the direct practices that you interact with as your social learning system, and very often, when people care about the learning in the organisation, they mostly care about the learning by the organisation maybe in an interaction with certain other practices. So for me, it is more something that is determined by the people living in that system, rather than me abstracting with some criterion that I apply from the outside.
I: In my mind, a social learning system is more abstract and more fluid than a community of practice.
WENGER: Yeah, but it includes the community of practice.
I: Yes, I understand that. It's more abstract, well, maybe not "abstract."
WENGER: It is often on a different level. Usually in a random system, you have multiple practices interacting.
I: Then I do understand what you're saying.
WENGER: ... Also to be fair how you set the boundaries also depends on the questions that you are asking yourself. So immediately you can see the museum as an entity in itself, but you also see what the museum pretends to do in the world. So depending on what question you ask, you'd have to include the visitors in the learning system or not. I think that those are dependent on what questions you're asking.
I: Okay. Because the questions that I'm also asking, for example the museum interpreter or education officer, I'm trying to find out what they learned from their collaboration with the teachers. And I'm also trying the other way around, ask the teacher, what she learned from working with the museum.
WENGER: I think that's very interesting because in some sense there are two practices. Two different practices that have to find some kind of meaningful intersection.
I: Yes exactly. And it's real exciting to see, because some of them do not really work very well together. When the teacher comes in to the partnership, she's bringing "the classroom" with her, and she's thinking in "classroom", and the museum person, on the other hand, says, "Okay, my reason for being here is to be open and to give guests a good experience." And they don't really listen to each other, they don't really learn. What ends up happening is that the students more or less complete a course that could just as well have taken place in the classroom, it's just been moved to the museum. And this is because they don't actually communicate, they don't understand that - the museum doesn't understand how to go in and say "look, you have to use our objects or our exhibits, or we can talk to the researcher and ask how he does things...".
WENGER: Yes.
I: But you also get these partnerships, where the synergy is amazing. And then I have this feeling, this is a kind of assumption that I have, which is also one of my research questions that I'm trying to find out, when that happens, do the students feel that they have learned a lot? Not as in making them say, "my teacher and this museum person got along famously" I'm not asking them to say that at all, I'm just trying to see if their answers to my questions show that they've learned, or if they feel they've learned a
lot within all these generic learning outcomes compared to the students, whose teacher and museum person did not work well together.

WENGER: That is interesting.

I: And it seems, I'm just at the beginning of this, but I seem to think that I might be seeing a tendency that that might be the case.

WENGER: The causality may be difficult to establish.

[Skype crashes again. Wenger and I decide to continue our conversation with the video link turned off. Wenger talks about claims to competence in the academic world. Then I ask him about what his theory says about power relationships in relation to communities of practice.]

I: There is this power thing, and I was thinking. When a school and a museum meet, a school has a basically different function than the museum. And a museum is actually put into the world to be ... it is an educational facility, but nowadays it is also a place of entertainment and it's a place where you go to get entertaining experiences. And they're in competition with each other and they are in competition with all other sorts of experience generating agencies like fun parks and cinemas...

WENGER: Right.

I: So, they actually earn money by getting people to come in and their basic raison d'etre is different from schools. So when they actually meet up with the school in these partnerships, they have a different interest in the partnership than the school has. And there is something, I can't quite put my finger on it, but there is some kind of power relationship or some kind of ... The museum is "pleasing" the teacher or the school, do you understand me?

WENGER: The school is more like a customer or something?

I: Exactly. The school is more like a customer, there is that feeling, I mean, it's not actually something that comes out, but there is still the feeling that the museum is often times – (and they're often a smaller institutions than the schools are) – in the partnerships that do not function very well, the school is kind of saying, "We want this and this and this" and the museum is nodding and saying "Okay, we can do this and this, and we'll do this for you." Do you see?

WENGER: Right, right, right.

I: And that makes the partnership unequal...

WENGER: Right, I can see that.

I: So I'm thinking there is something in these communities of practice and these models - do you have any idea how I can go in and actually say... I'm not asking you to help me find out if this is happening, but a model to describe it? I mean, have you yourself written about this?

WENGER: You mean, about unequal relationships between practices at the boundary?

I: Yes. Have you written about that?

WENGER: No. I have not written about that explicitly, I mean that it's always there whenever you have boundary interactions. But where will you find something that is written?...

I: No, I was thinking that, when we are talking about these negotiations that takes place at the borders of communities of practice, there are of course, always these power relations, somebody that is in the "know" and somebody that is not in the "know", right?
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WENGER: Well that is a bit different. Because again, claims to knowledge should be different to claims to competence. Claims to knowledge are a bit different from claims of competence because they happen across communities.

I: Okay. I'm thinking that when two communities of practice meet, and they have to negotiate in a partnership and they have to negotiate their boundaries and then there are some people who are really good boundary brokers and others who never cross the boundary. But at these boundaries, when they meet, anywhere in life, not just between schools and museums, but anywhere, they are probably very rarely completely equal, is that right?

WENGER: Well, I think that, that depends very much on the person, right?

I: Yes.

WENGER: Because even if a boundary can be unequal, then the negotiation, I mean probably a good doctor is someone who can make the moment of interaction and the boundary with a client / patient one of, I wouldn't say in equality, but one of true negotiation, of relevance of each other's knowledge, you see?

I: Yes.

WENGER: So, that doesn't mean that the doctor and the patients are equal, because I will still go to the doctor myself if I was sick. I would not go to the patient, so even though the power relation is not equal in the moment of interaction, how people choose to negotiate the boundary makes a big difference, so I would say that unequal power between the museum and the school does not determine the relationship between two individuals who live at that boundary.

I: Okay, exactly.

WENGER: And I would say probably the people who are successful are the ones who are truly acting as learning partners, bringing whatever they can from their practice to the table as opposed to kind of taking advantage, instead of kind of reproducing an inequality.

I: Yes, I understand that. That is real clear to me. How do you actually describe that? I mean, I can describe it in words like you were doing, but I'm thinking, is there any way you can see that if you're like watching...

WENGER: Yes, I think you would be able to see how much people draw on the other person’s practice, to create a space between them that is a true learning space, a true learning partnership.

[We talk briefly about how Wenger facilitates moments of interaction]

I: So in other words, what you are saying is that you have to be very open towards each other.

WENGER: Yes, you have to put learning ahead of power ... and so it seems to me that the ability to enter another person’s practice to get a feel for it enough that you can actually see how a new partnership can be developed. This is what I would be looking for.

I: Yes.

WENGER: And I think in your case, it might be fairly easy to see because it seems to me that the ones that didn't work, they didn't want to see the museum as a museum, they wanted to see it as another classroom, see what I mean?

I: Yes, exactly.
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[Wenger and I talk about a fable, which neither of us can remember precisely, something about a salt-eating ant and a sugar-eating ant.]

WENGER: So, if the teacher sometimes doesn't come out of his or her own practice, in the interaction with the museum, and they don't need to do that because of their power relationship, you see?
I: Right.
WENGER: That would be an interesting observation. That the power relationship allows the person not to visit the other practice, to see what opportunities exist there. But this is the way I would characterize it.

[Wenger and I talk about what theories and theorists inspired and influenced his own thinking]

WENGER: Well, I mean, people like Bourdieu, Pierre Bourdieu, I don't know if you know him.
I: Yes I do
WENGER: And other people who have influenced me, Paul Willis from the UK, a strong influence on me Michel Foucault. These are very important influences on me, Jean Lave, of course, my own advisor, very strong influence...
I: Bourdieu talks a lot about power relationships
WENGER: Because his theory is about power, you see. Because I would call Bourdieu a theorist of stratification, a social theorist of stratification, a cultural theorist of stratification, basically he, even though he claims not to be a Marxist, he is a Marxist. Because he is very interested in social class, but that is from a cultural perspective. So it's very interesting, he is a theorist of power as opposed to a learning theorist, I'm a learning theorist. So power isn't the first thing that I focus on. See?
I: Right.
WENGER: So, for me I talk about competence because I'm a learning theorist and Bourdieu talks about cultural capital, because for him, competence is not something that is interesting in and of itself, he wants to see what power it gives you, that's the point.
I: So, you're looking at the competence itself?
WENGER: Probably because I'm a learning theorist I'm interested in the development of competence-
I: Right.
WENGER: But really what I call competence, which, by the way, is a claim to competence, there are power relationships in that. That's the theory. But for me I foreground the learning aspect, whereas Bourdieu foregrounds the power aspect. So, it is because we're interested in different things.
I: Right
WENGER: Our perspectives are very, very similar.

[Wenger and I continue to discuss different theorists that have inspired him. After this I round off the conversation by thanking him for his time and we say good-bye.]
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Fig. 8j Overview of Wengerian concepts with page numbers

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<tr>
<td>Trajectories</td>
<td>108</td>
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Chapter 9 Brigby Gymnasium & HF and Brigby Art Museum

<table>
<thead>
<tr>
<th>Fig. 9a</th>
<th>Brigby 1x</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enjoyable experience ➔ enjoyment promotes learning</td>
<td>Fun to be out of the classroom but there was little or no learning; Did not realize that anything could be learned at the museum; The students do not foresee visiting the museum in their leisure time</td>
</tr>
<tr>
<td>More relaxed atmosphere ➔ better concentration and focus</td>
<td>Frustration and lack of concentration in the group work due to complexity of task at hand</td>
</tr>
<tr>
<td>Free-choice learning (greater self-determination)</td>
<td>To do the task at hand, the students had to use the tablet PC and the museum’s other teaching materials (e.g. Argument cards)</td>
</tr>
<tr>
<td>No performance assessment ➔ relief</td>
<td>The teacher was present ➔ assessment after all</td>
</tr>
<tr>
<td>The teacher did not know more that the students ➔ more “equal” relationship</td>
<td>Students turned to the teacher for help at the museum, not the expert</td>
</tr>
<tr>
<td>Everyone was equal and had equal say</td>
<td>Unable to do the task ➔ within-group frustration and intermittent loss of focus and attention</td>
</tr>
<tr>
<td>There is no right or wrong answer</td>
<td>Unable to relate the work to the paintings ➔ feeling inadequate and ineffectual</td>
</tr>
<tr>
<td>The museum expert/educator was very motivating</td>
<td>Nervousness about appearing dull or ill-informed in front of the museum expert</td>
</tr>
<tr>
<td>There are connections between the museum program and learning at school; The debate gathered the “loose ends”</td>
<td>Pointless exercise as the topic was outdated in relation to school lessons</td>
</tr>
</tbody>
</table>

Fig. 9a Amalgamation of Brigby 1x’s reflections regarding their learning experience
**Chapter Appendix**

**GLO2**

Brigby1xB2

Pre - I will become more confident when I have to explain the subject(s) to others orally.
Post - I have become more confident when I have to explain the subject(s) to others orally.

$1x = 11$

<table>
<thead>
<tr>
<th>1 Definitely</th>
<th>2 Pretty sure</th>
<th>3 Not very likely</th>
<th>4 Not at all</th>
<th>5 Do not know</th>
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**GLO2**

Brigby1xB3

Pre - I will gain insight into how the museum presents knowledge about objects through exhibits.
Post - I gained insight into how the museum presents knowledge about objects through exhibits.

$1x = 11$

<table>
<thead>
<tr>
<th>1 Definitely</th>
<th>2 Pretty sure</th>
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**GLO2**

Brigby1xB6

Pre - I will become aware of how I can use the museum in relation to school work.
Post - I have become aware of how I can use the museum in relation to school work.

$1x = 11$

<table>
<thead>
<tr>
<th>1 Definitely</th>
<th>2 Pretty sure</th>
<th>3 Not very likely</th>
<th>4 Not at all</th>
<th>5 Do not know</th>
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</table>
Chapter Appendix

Graphs BrigbyTotalA1-E4 (28 graphs in all):

GLO1

BrigbyTotalA1
Pre - My knowledge of the subject(s) in the coursework will be increased
Post - My knowledge of the subject(s) in the coursework has been increased
1x = 11, 1z = 19

GLO1

BrigbyTotalA2
Pre - My understanding of how the subject(s) of the coursework differ from other subjects will be increased.
Post - My understanding of how the subject(s) of the coursework differ from other subjects has been increased.
1x = 11, 1z = 19

GLO1

BrigbyTotalA3
Pre - My understanding of how the subject(s) can be applied in practice will be increased.
Post - My understanding of how the subject(s) can be applied in practice has been increased.
1x = 11, 1z = 19
GLO1

Pre - I will gain insight into how museum objects can be used to create knowledge.
Post - I have gained insight into how museum objects can be used to create knowledge.

1x = 11, 1z = 19

GLO1

Pre - I will become aware of how knowledge is interpreted differently at school and at the museum.
Post - I have become aware of how knowledge is interpreted differently at school and at the museum.

1x = 11, 1z = 19

GLO1

Pre - I will gain insight into how the museum functions.
Post - I have gained insight into how the museum functions.

1x = 11, 1z = 19
Chapter Appendix

GLO1

Pre - I will become more knowledgeable of the town and the local area.
Post - I have become more knowledgeable of the town and the local area.

1x = 11, 1z = 19

GLO2

Pre - I will become more aware of how I can use museum objects to communicate subject-matter.
Post - I have become more aware of how I can use museum objects to communicate subject-matter.

1x = 11, 1z = 19

GLO2

Pre - I will become more confident when I have to explain the subject(s) to others orally.
Post - I have become more confident when I have to explain the subject(s) to others orally.

1x = 11, 1z = 19
### GLO2

**BrigbyTotalB3**

Pre - I will gain insight into how the museum presents knowledge about objects through exhibits.

Post - I gained insight into how the museum presents knowledge about objects through exhibits.

1x = 11, 1z = 19

<table>
<thead>
<tr>
<th></th>
<th>1 Definitely</th>
<th>2 Pretty sure</th>
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![Graph showing the comparison between Pre and Post insights](image1)

### GLO2

**BrigbyTotalB4**

Pre - By working at the museum and with museum objects, I will become more aware of how I learn.

Post - By working at the museum and with museum objects, I have become more aware of how I learn.

1x = 11, 1z = 19

<table>
<thead>
<tr>
<th></th>
<th>1 Definitely</th>
<th>2 Pretty sure</th>
<th>3 Not very likely</th>
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![Graph showing the comparison between Pre and Post awareness](image2)

### GLO2

**BrigbyTotalB5**

Pre - I will become better at formulating subject-related questions by having to put them to museum employees.

Post - I have become better at formulating subject-related questions by having to put them to museum employees.

1x = 11, 1z = 19

<table>
<thead>
<tr>
<th></th>
<th>1 Definitely</th>
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<td>Post</td>
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</table>

![Graph showing the comparison between Pre and Post question formulation](image3)
Chapter Appendix

**GLO2**

**BrigbyTotalB6**

Pre - I will become aware of how I can use the museum in relation to school work.
Post - I have become aware of how I can use the museum in relation to school work.

1x = 11, 1z = 19

<table>
<thead>
<tr>
<th></th>
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**GLO2**

**BrigbyTotalB7**

Pre - I will become better at working in groups.
Post - I have become better at working in groups.

1x = 11, 1z = 19

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<tr>
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**GLO2**

**BrigbyTotalB8**

Pre - I will discover that our group work functions differently at the museum than it does at school.
Post - I discovered that our group work functioned differently at the museum than it does at school.

1x = 11, 1z = 19

<table>
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</table>
Chapter Appendix

### GLO3

**BrigbyTotalC1**

Pre - I will experience new things about my classmates.

Post - I have experienced new things about my classmates.

1x = 11, 1z = 19

### GLO3

**BrigbyTotalC2**

Pre - I will discover that the academic level at the museum is different that it is at school.

Post - I have discovered that the academic level at the museum is different that it is at school.

1x = 11, 1z = 19

### GLO3

**BrigbyTotalC3**

Pre - My attitude to how I learn at school will change.

Post - My attitude to how I learn at school has changed.

1x = 11, 1z = 19
Chapter Appendix

**GLO3**

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1x = 11, 1z = 19

**GLO4**

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1x = 11, 1z = 19

**GLO4**

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1x = 11, 1z = 19

**GLO4**

<table>
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<td>4 Not at all</td>
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<tr>
<td>5 Do not know</td>
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</tbody>
</table>

1x = 11, 1z = 19
**Chapter Appendix**

### GLO4

**BrigbyTotalD3**

Pre - I will notice that it is easier for me to ask the museum interpreter questions that my teacher(s).

Post - I noticed that it was easier for me to ask the museum interpreter questions than my teacher(s).

$1x = 11, 1z = 19$

<p>| | | | | | | | | | |</p>
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</tbody>
</table>

**BrigbyTotalD4**

Pre - I will see that the subject-related quality of the prod. of our coursework will be higher...

Post - I saw that the subject-related quality of the prod. of our coursework was higher...

$1x = 11, 1z = 19$

<p>| | | | | | | | | | |</p>
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</table>

**BrigbyTotalD5**

Pre - It will be challenging for me to work with subject-related things outside the school.

Post - It was challenging for me to work with subject-related things outside the school.

$1x = 11, 1z = 19$

<p>| | | | | | | | | | |</p>
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### GLOS

#### Pre - Being at the museum will motivate the groups and my classmates and me to act differently...

#### Post - Being at the museum motivated the groups and my classmates and me to act differently...

1x = 11, 1z = 19

<table>
<thead>
<tr>
<th>Definitely</th>
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<th>Not Very Likely</th>
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</table>

#### Pre - We students will make an effort to make a good impression on the museum staff.

#### Post - We students made an effort to make a good impression on the museum staff.

1x = 11, 1z = 19

<table>
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<tr>
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<th>Not at All</th>
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#### Pre - I will be more likely to use the museum for school work after completing this coursework.

#### Post - I am more likely to use the museum for school work after completing this coursework.

1x = 11, 1z = 19

<table>
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**GLO5**

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<tr>
<th>brigbyTotalE4</th>
<th>1x</th>
<th>1z</th>
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<tbody>
<tr>
<td>Pre - I will be more likely to visit the museum in my spare time after this completing this coursework.</td>
<td></td>
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</tr>
<tr>
<td>Post - I am more likely to visit the museum in my spare time after this completing this coursework.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$1x = 11$, $1z = 19$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1 Definitely</th>
<th>2 Pretty sure</th>
<th>3 Not very likely</th>
<th>4 Not at all</th>
<th>5 Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>5</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>6</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**
- Green: Pre
- Blue: Post
Fig. 9b Distribution of responses regarding expected learning outcomes, pre-survey, Brigby 1x

<table>
<thead>
<tr>
<th>GLO (^5)</th>
<th>Positive</th>
<th>Negative</th>
<th>Neither</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>x x x x x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>x x</td>
<td>x x</td>
<td></td>
<td>x x x x</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>x x x x</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>x x x x</td>
</tr>
<tr>
<td>5</td>
<td>x x</td>
<td></td>
<td></td>
<td>x x</td>
</tr>
</tbody>
</table>

Fig. 9c Distribution of responses regarding remembered learning experiences, Post-survey, Brigby 1x

<table>
<thead>
<tr>
<th>GLO</th>
<th>Positive</th>
<th>Negative</th>
<th>Neither</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>x x</td>
<td></td>
<td>x x x x</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>x x</td>
<td></td>
<td>x x x x</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>x x</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>x x x</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

---

\(^4\) Fig. 9b and 9c: The findings here are based on the eleven 1x Pre and Post-survey responses, respectively, to the questions within each GLO. If eight or more students (out of the eleven who answered both online surveys) ticked “Definitely” or “Pretty sure,” that is interpreted as being either a generally positive expected learning outcome or a remembered learning experience and is called “Positive” in this figure. Likewise, if eight or more students ticked “Not very likely” or “Not at all”, that is interpreted as being either an overall negative expected learning outcome or a remembered learning experience and is called “Negative” in this figure. If eight or more students ticked “Pretty sure” or “Not very likely,” that is interpreted as being neither a predominantly positive nor predominantly negative expectation or remembered learning experience and is called “Neither” in this figure. Other distributions of eight or more responses are interpreted as being inconclusive and are called “Other” in this figure (this does not mean to say that data distributed in this manner are insignificant; however, this figure is intended only to offer an overview of the distribution of student Pre- and Post-survey responses.) Eight students constitute 73% of the students who answered both online surveys. The number of X’s in the rows reflects the number of questions within each GLO category.

\(^5\) GLO 1: Knowledge and understanding; GLO 2: Skills; GLO 3: Attitudes and values; GLO 4: Enjoyment, inspiration, creativity; GLO 5: Activity, behavior and progression
### Brigby 1z

<table>
<thead>
<tr>
<th>Reflections</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding of how to use the tablet PC and other materials; Understanding of how to apply the RomanticArt program to the authentic artwork; Enjoyment from using the tablet PC → surprise that it was fun to work at the museum</td>
<td>Passive onlookers during the debate did not get much out of it though it was fun to see</td>
</tr>
<tr>
<td>Appreciation of the authentic artwork and historical sources; Detailed recollection of the painting</td>
<td>Pronounced disappointment that not all groups were allowed to present their findings at the museum</td>
</tr>
<tr>
<td>More relaxed atmosphere at the museum → more fun → enhanced learning Less routine and hectic than school;</td>
<td>The students were quieter than normal but otherwise unchanged in their behavior</td>
</tr>
<tr>
<td>Freedom of movement → Free-choice learning (self-determination) → greater motivation → enhanced learning; Engagement and activity at the museum</td>
<td>Some students did not take the work seriously because it was not required work</td>
</tr>
<tr>
<td>Everyone was equal at the museum → group work was easier and more open and personal opinions were seen as valid answers → this discovery can be used in other social contexts Not being assessed made the process more relaxed → less pressure; There were no right or wrong answers → more individualized learning; New constellations of students in the groups → positive experience</td>
<td></td>
</tr>
<tr>
<td>The physical context (Exhibition Hall at the museum) was cozy; The students were quieter than normal out of consideration for the other groups’ work; The students felt welcome at the museum</td>
<td></td>
</tr>
<tr>
<td>No preference regarding asking their teacher or the museum educator for help (Aretha and Martha)</td>
<td>The museum educator was a stranger → more subdued approach to her (Drew)</td>
</tr>
<tr>
<td>If there is a special event or engaging activities at the museum requiring active participation → possible leisure time visit</td>
<td>The students do not foresee visiting the museum in their leisure time</td>
</tr>
<tr>
<td>The students might use the museum if it was relevant to an assignment (Aretha and Martha)</td>
<td>Google is seen as a more useful instrument to find information (Drew)</td>
</tr>
</tbody>
</table>

Fig. 9d Amalgamation of 1z’s reflections regarding their learning experience
Chapter Appendix

**GLO2**

**Brigby1zB1**

Pre - I will become more aware of how I can use museum objects to communicate subject-matter.

Post - I have become more aware of how I can use museum objects to communicate subject-matter.

$1z = 19$

**GLO2**

**Brigby1zB8**

Pre - I will discover that our group work functions differently at the museum than it does at school.

Post - I discovered that our group work functioned differently at the museum than it does at school.

$1z = 19$

**GLO5**

**Brigby1zE4**

Pre - I will be more likely to visit the museum in my spare time after this completing this coursework.

Post - I am more likely to visit the museum in my spare time after this completing this coursework.

$1z = 19$
### GLO 1 Question content

<table>
<thead>
<tr>
<th>Q. no.</th>
<th>% of 1x</th>
<th>% of 1z</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>55</td>
<td>74</td>
</tr>
<tr>
<td>A3</td>
<td>36</td>
<td>57</td>
</tr>
<tr>
<td>A4</td>
<td>72</td>
<td>84</td>
</tr>
</tbody>
</table>

**Fig. 9e**

<table>
<thead>
<tr>
<th>Learning category</th>
<th>Response summary – Learning outcomes</th>
</tr>
</thead>
</table>
| **GLO 1** (Knowledge and understanding) | The students learned:  
- About National Romanticism and the artist  
- That school learning can be applied in the museum;  
The students learned more than their teacher;  
*The students did not learn about learning* |
| **GLO 2** (Skills) | Students experienced their teacher and each other in a new context → different communication;  
Exploring and investigating → “Treasure hunt” at the museum, being curious;  
Improved collaborative skills due to:  
- Close physical proximity and freedom of movement  
- Necessary consensus about decisions made in the group;  
The students got practice in:  
- Combining knowledge from different sources  
- Acquainting themselves quickly with diverse materials and choosing which to use  
- Working with classmates they would normally not work with  
- Working in a new learning environment outside of school;  
*Some students’ learning was frustrated by the difficulty of the program;  
The good students took the lead* |
| **GLO 3** (Attitudes and values) | It was motivating for the students:  
- Not to be assessed  
- To have a personal experience of the artwork through the sound and light show  
- That they were encouraged to use their personal experience as the point of departure for their work (instead of textbook learning)  
- To be able to relate the experience of the art to their own lives  
- To use modern technology in a museum context  
- To learn about an institution outside of school  
- To see the museum from a new perspective |
| **GLO 4** (Enjoyment, inspiration, creativity) | Several students were inspired by the visit → considered using Nat’l Romanticism as the topic of their paper (this changed later);  
They enjoyed themselves and were freer and more spontaneous;  
*Some groups were frustrated by the program on the PC tablet* |
| **GLO 5** (Activity, behavior and  
creativity) | The students:  
- Were more active at the museum |
- Took responsibility for their own learning
- Were more informal towards each other and their teacher
- Were shy and subdued with Tammy;

*The students’ shyness was a problem during the debate*

Figure 9f Beth on students’ learning (1x). Thwarted learning outcomes are italicized.

<table>
<thead>
<tr>
<th>Learning category</th>
<th>Response summary – Learning outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLO 1 (Knowledge and understanding)</td>
<td>The students were better at remembering the painting used in the debate than an important text from Nat’l Romanticism; The students’ learning outcomes were reinforced by subsequent mention of the museum coursework in their lessons at school; <em>The students were pressed for time → did not achieve a deeper understanding of the topic</em></td>
</tr>
</tbody>
</table>
| GLO 2 (Skills) | The students learned:
- To master the tablet PC
- To combine the information on the table PC with the information To the other materials
- To work independently (Heather could not help them)
- To become absorbed in a painting (the sound and light show)
Some academically weak boys who were good at technical things perked up and a few actually took the lead in their groups; The students were grouped closely together around their tablets → encouraged participation; Students experienced their teacher and each other in a new learning context → different communication; *Some students got bogged down figuring out how to use the tablet PC → spent too little time on the subject-related work; Some students become frustrated by not having time to do the work properly* |
| GLO 3 (Attitudes and values) | The students were motivated:
- By the tablet PCs
- By not being assessed
- By learning about the museum
- By discovering the museum used modern technology
- By meeting an expert (Tammy)
- By not having to perform to a standard → sense of security even in unfamiliar surroundings; |
| GLO 4 (Enjoyment, inspiration, creativity) | The students:
- Thought that the sound and light show created a solemn, almost reverent atmosphere
- Felt that it was fun at the museum because they were not being assessed
- Were surprised that the museum offered modern activities
- Were pleased that there was an expert there to help them
- Absorbed in their work because they were busy the whole time |
Chapter Appendix

- Felt comfortable at the museum because it was cozy and warm
- Explored the exhibit—physical movement helped them concentrate
- Were unclear about the object of the visit prior to their arrival at the museum and were pleasantly surprised by their experience

GLO 5
(Activity, behavior and progression)

At first the student were subdued by being in a new place;
The students were more responsible in their group work at the museum;
Some normally inactive students became more active and responsible at the museum

Figure 9g Heather on students’ learning (1z) Thwarted learning outcomes are italicized.

<table>
<thead>
<tr>
<th>Learning category</th>
<th>Response summary – Learning outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLO 1 (Knowledge and understanding)</td>
<td>Students learned:</td>
</tr>
<tr>
<td></td>
<td>- Facts about the artist</td>
</tr>
<tr>
<td></td>
<td>- That the museum has many resources (not just paintings)</td>
</tr>
<tr>
<td></td>
<td>- To see art from different angles</td>
</tr>
<tr>
<td></td>
<td>- There are no right or wrong answers about what a person gets out of art</td>
</tr>
<tr>
<td></td>
<td>- about the artist’s identity, which made the Golden Age personal to them</td>
</tr>
<tr>
<td></td>
<td>When the students get older, they might remember their learning experience at the museum</td>
</tr>
<tr>
<td>GLO 2 (Skills)</td>
<td>The students learned:</td>
</tr>
<tr>
<td></td>
<td>- aesthetic contemplation (the sound and light show)</td>
</tr>
<tr>
<td></td>
<td>- how to use other senses (their senses are stimulated)</td>
</tr>
<tr>
<td></td>
<td>- to master the tablet PC</td>
</tr>
<tr>
<td></td>
<td>- to explore the material on the tablet PC</td>
</tr>
<tr>
<td></td>
<td>- how to study historical sources and relate them to the paintings</td>
</tr>
<tr>
<td></td>
<td>- about reading 19th century Danish</td>
</tr>
<tr>
<td></td>
<td>- how to state their views in an argument;</td>
</tr>
<tr>
<td></td>
<td>The students got practice in working independently</td>
</tr>
<tr>
<td>GLO 3 (Attitudes and values)</td>
<td>The students are young people → visiting a museum is not considered important;</td>
</tr>
<tr>
<td></td>
<td>The students’ view of the museum was not fundamentally changed</td>
</tr>
<tr>
<td>GLO 4 (Enjoyment, inspiration, creativity)</td>
<td>The students:</td>
</tr>
<tr>
<td></td>
<td>- got a new experience of art (moved around the exhibit and experienced the paintings close-up)</td>
</tr>
<tr>
<td></td>
<td>- were surprised by the sound and light show</td>
</tr>
<tr>
<td></td>
<td>- were surprised by the tablet PC and other materials</td>
</tr>
<tr>
<td></td>
<td>- were surprised by the debate at the end of their visit</td>
</tr>
<tr>
<td></td>
<td>- obviously enjoyed themselves (the teacher said they were livelier)</td>
</tr>
<tr>
<td></td>
<td>- were curious and explored the exhibition</td>
</tr>
<tr>
<td></td>
<td>- might not have enjoyed the visit because it was part of school work</td>
</tr>
<tr>
<td>GLO 5 (Activity, behavior and progression)</td>
<td>The students were livelier and more absorbed at the museum than at school (according to their teacher)</td>
</tr>
</tbody>
</table>

Figure 9h Tammy on students’ learning (1x and 1z)
### Beth, teacher, Brigby

#### Collaboration
- There was no collaboration;
- At the museum, she relinquished her authority to Tammy;
- No matching of expectations had taken place;
- There was no formalized communication between the school and the museum;
- The partnership should work together to produce teaching materials to use before and after the coursework at the museum to better integration of the program in a school topic.

#### SWOT

**Strengths**
- Academically weak students are given a good learning opportunity at museums;
- Students become involved in a personal way (this is motivating);
- It is possible to insert a practical element in the students’ learning;
- The museum has expert knowledge and resources that are unavailable elsewhere;
- The teacher learns from the process.

**Weaknesses**
- The present program is too ambitious, complicated and time-consuming;
- There is not formalized channel of communication between the school and the museum;
- Communication is difficult because the institutions are not used to collaborating.

**Opportunities**
- Enlisting upper secondary school teachers as consultants on museum educative programs;
- Formalizing the collaboration;
- Using museums much more as a supplement to lessons;
- Collaborating to ensure that the museum’s educational programs are targeted the curriculum.

**Threats**
- If the collaboration becomes too time-consuming and is not formalized.

---

6 The museum already offered teaching material online.

---

Fig. 9i Beth regarding collaboration and SWOT
<table>
<thead>
<tr>
<th><strong>Heather, teacher, Brigby</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Collaboration</strong></td>
<td>There was no collaboration between herself and Tammy; All contact between her class and the museum was organized by her colleague, Harold; Her role at the museum was to be the “watchdog”; She was not familiar with the program (and could not help the students); She did not talk much with the students because they were doing the museum’s coursework; She did not know that Tammy was leaving her position at the museum; She had several ideas about how to improve the coursework</td>
</tr>
<tr>
<td><strong>SWOT</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Strengths</strong></td>
<td>The museum does not assess the students’ performance; The museum encourages the students to take responsibility for their own learning; The museum’s approach to teaching and learning is a good supplement to the school’s approach; When the students have prior knowledge of the topic, their learning experience at the museum is enhanced; The students’ prior knowledge is activated in a new learning environment (the museum); The school has a wide variety of students and study programs; The teachers have knowledge about the museum’s remit – there is a mutual frame of reference; The school’s timetables are very flexible</td>
</tr>
<tr>
<td><strong>Weaknesses</strong></td>
<td>The RomanticArt program is too ambitious and complicated; Not enough time is allotted to the students to do the program properly; The methods of teaching and learning are different so there is the risk that the students do not learn enough</td>
</tr>
<tr>
<td><strong>Opportunities</strong></td>
<td>Exploiting the fact that the institutions and their methods of education are different → potential positive synergy</td>
</tr>
<tr>
<td><strong>Threats</strong></td>
<td>If the teachers the museum’s educational programs do not support the students’ learning; If the students themselves find the experience more confusing than educational</td>
</tr>
</tbody>
</table>

Fig. 9j Heather regarding collaboration and SWOT
Collaboration

1st year of collaboration:
- Brainstorming meetings first, then development of concrete plans for coursework (which was the foundation for RomanticArt);
- Close collaboration with teachers Harold and Dorothy and students to ensure RomanticArt’s value as teaching material;
- The tablet program itself was developed by the museum afterwards and then tested on and evaluated by students and evaluated by the teachers;
- Collaboration about museum-based teaching material is a win-win situation;
- She was grateful for and pleased with the collaboration;
- Visiting the school worked well, it would be a good idea to organize that more often and that would mean a greater exchange of knowledge;
- Long-term planning is necessary to organize meetings and establish the collaboration as a permanent part of one’s daily routine so focus on the partnership is maintained;
- The museum benefits greatly when other professionals are involved in the planning and development of educational programs;
- The collaboration would benefit from:
  - long-term planning and a certain degree of formalization
  - greater dedication to each other – this requires changing both institutions’ mindset and conventional course of action
- The collaboration needs to be balanced so that the institutions do not tire of one another

2nd year of collaboration:
- There was no collaboration between her and the Beth and Heather

<table>
<thead>
<tr>
<th>SWOT</th>
<th>Strengths</th>
<th>There are good discussions about content, pedagogy and teaching methods; Visiting the students on their home ground to tell them about museums</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWOT</td>
<td>Weaknesses</td>
<td>Everyone is busy and it is difficult to coordinate timetables;</td>
</tr>
<tr>
<td>SWOT</td>
<td>Opportunities</td>
<td>Turning the partnership’s collaboration into a tradition</td>
</tr>
<tr>
<td>SWOT</td>
<td>Threats</td>
<td>Teachers who are not as open and geared to collaboration as Harold and Dorothy were</td>
</tr>
</tbody>
</table>

Fig. 9k Tammy regarding collaboration and SWOT
Harold, teacher, Brigby

<table>
<thead>
<tr>
<th>Collaboration</th>
<th><strong>1st year of collaboration:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Close collaboration for nearly a year to develop the coursework;</td>
</tr>
<tr>
<td></td>
<td>Discussing learning outcomes, pedagogic and didactic framing, etc.</td>
</tr>
<tr>
<td></td>
<td>The students learned about the museum from Tammy, who visited the school, and about National Romanticism from the teachers;</td>
</tr>
<tr>
<td></td>
<td>The museum accommodated the students when they needed help;</td>
</tr>
<tr>
<td></td>
<td>The coursework was evaluated by the students [they were generally positive];</td>
</tr>
<tr>
<td></td>
<td>The students’ reports were used to evaluate the value and effect of the coursework</td>
</tr>
<tr>
<td></td>
<td>The teachers and a focus group of students were consultants on the development of RomanticArt</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>2nd year of collaboration:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>His colleagues did not collaborate with the museum but booked ready-made teaching material (the RomanticArt coursework);</td>
</tr>
<tr>
<td>The museum was developing a non-school related APP, which would be tested on students;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>In general:</th>
</tr>
</thead>
<tbody>
<tr>
<td>The collaboration was formalized (Harold is the liaison officer);</td>
</tr>
<tr>
<td>Collaboration means that the museum is involved in planning lessons and materials for the students, a process which is normally organized 100% by the teachers;</td>
</tr>
<tr>
<td>The <em>interface</em> concept has changed the way the school uses museums — earlier teachers would just book a guided tour and now the school contributes to targeting the museum’s educational offerings to the curriculum and syllabus of a given class or year;</td>
</tr>
<tr>
<td>He felt honored that the museum would collaborate with the school;</td>
</tr>
<tr>
<td>Collaborating provided an extra dimension to teaching – it was exciting;</td>
</tr>
<tr>
<td>It was exciting to participate in the process of translating the museum through educational programs on the tablet PC and on APPs, making the museum accessible;</td>
</tr>
<tr>
<td>Collaboration must be more than just having a contact person at the other institution;</td>
</tr>
<tr>
<td>It must not become cumbersome; must provide relevant, readymade solutions for the teachers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SWOT Strengths</th>
<th><strong>1st year of collaboration:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Both partners were enthusiastic and focused on opportunities, not limitations;</td>
</tr>
<tr>
<td></td>
<td>In general:</td>
</tr>
<tr>
<td></td>
<td>100% support from management, including allocation of funds;</td>
</tr>
<tr>
<td></td>
<td>The school’s involvement in <em>interface</em> is used as par to the school’s marketing strategy</td>
</tr>
</tbody>
</table>

| SWOT Weaknesses | The museum can only handle two collaborations per year \(\Rightarrow\) the teachers cannot use it spontaneously |

| SWOT Opportunities | Creating an upward spiral for both institutions \(\Rightarrow\) positive word of mouth mention and publicity; |
|                   | Commercial profit for the museum; |
|                   | The school is seen as being active in the community |

| SWOT Threats | Coming to a standstill in the partnership, e.g. by not renewing or developing new material; |
|             | Perceiving that the collaboration is too time-consuming and cumbersome |

Fig. 9l Harold regarding collaboration and SWOT
Beth, teacher, Brigby

<table>
<thead>
<tr>
<th>What did she learn?</th>
</tr>
</thead>
<tbody>
<tr>
<td>She learned new things about her students;</td>
</tr>
<tr>
<td>She learned new things about herself as a teacher after adopting a passive, non-expert role at the museum and learning less than them there;</td>
</tr>
<tr>
<td>She established a new practice in her Danish lessons;</td>
</tr>
<tr>
<td>She got new ideas about how to plan and organize her lessons;</td>
</tr>
<tr>
<td>She was inspired by the program’s approach to learning (students are active and create their own learning)</td>
</tr>
<tr>
<td>She learned about the artist and the Golden Age in art;</td>
</tr>
</tbody>
</table>

Fig. 9m, Beth regarding her own learning

Heather, teacher, Brigby

<table>
<thead>
<tr>
<th>What did she learn?</th>
</tr>
</thead>
<tbody>
<tr>
<td>She would have to spend more time preparing the students so they would be more sure of themselves regarding the topic of the museum coursework;</td>
</tr>
<tr>
<td>She learned about the effect of downplaying her role as the teacher while at the museum;</td>
</tr>
<tr>
<td>It was good for her and her students to experience each other in this new learning context;</td>
</tr>
<tr>
<td>She learned that the excursion was a good supplement to classroom lessons (the students clearly remembered the paintings at the museum);</td>
</tr>
<tr>
<td>She realized that many of her Danish colleagues were curious about the museum and the coursework;</td>
</tr>
<tr>
<td>The museum educator was very good at handling the students;</td>
</tr>
<tr>
<td>That the students expected to be assessed at the museum;</td>
</tr>
<tr>
<td>It would be a good idea for the museum to offer teaching materials and activities online;</td>
</tr>
</tbody>
</table>

Using the museum was very relevant to use in conjunction with Danish curriculum

Fig. 9n, Heather regarding her own learning

Tammy, museum educator, Brigby

<table>
<thead>
<tr>
<th>What did she learn?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year of collaboration:</td>
</tr>
<tr>
<td>She learned:</td>
</tr>
<tr>
<td>- about pedagogy and teaching methods for this level of students and about lesson design</td>
</tr>
<tr>
<td>- about what the teachers need, e.g. about curriculum requirements for Danish and History and could thus contribute to the teachers’ lessons</td>
</tr>
<tr>
<td>- how to work with students of that age</td>
</tr>
<tr>
<td>- from the students, whose feedback was useful</td>
</tr>
</tbody>
</table>

2nd year of collaboration:

The technical introduction of the program took too long;
Even after the introduction of the program, the students had trouble with it

Fig. 9o Tammy regarding her own learning

---

7 The museum already offered teaching material online
Chapter 10 Hammersby Gymnasium & HF and Hammersby Museum

**GLO1**

**Hammersby2tA1**
- Pre - My knowledge of the subject(s) in the coursework will be increased.
- Post - My knowledge of the subject(s) in the coursework has been increased.

2t = 22

**GLO1**

**Hammersby2tA2**
- Pre - My understanding of how the subject(s) of the coursework differ from other subjects will be increased.
- Post - My understanding of how the subject(s) of the coursework differ from other subjects has been increased.

2t = 22

**GLO1**

**Hammersby2tA3**
- Pre - My understanding of how the subject(s) can be applied in practice will be increased.
- Post - My understanding of how the subject(s) can be applied in practice has been increased.

2t = 22
### GLO1

**Hammersby2tA4**

**Pre** - I will gain insight into how museum objects can be used to create knowledge.

**Post** - I have gained insight into how museum objects can be used to create knowledge.

\[ 2t = 22 \]

<table>
<thead>
<tr>
<th>Response</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Definitely</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>2 Pretty sure</td>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td>3 Not very likely</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>4 Not at all</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5 Do not know</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

### GLO1

**Hammersby2tA5**

**Pre** - I will become aware of how knowledge is interpreted differently at school and at the museum.

**Post** - I have become aware of how knowledge is interpreted differently at school and at the museum.

\[ 2t = 22 \]

<table>
<thead>
<tr>
<th>Response</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Definitely</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>2 Pretty sure</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>3 Not very likely</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>5 Do not know</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

### GLO1

**Hammersby2tA6**

**Pre** - I will gain insight into how the museum functions.

**Post** - I have gained insight into how the museum functions.

\[ 2t = 22 \]

<table>
<thead>
<tr>
<th>Response</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Definitely</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2 Pretty sure</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>3 Not very likely</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5 Do not know</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
**Chapter Appendix**

GLO1

**Hammersby2A7**

Pre - I will become more knowledgeable of the town and the local area.
Post - I have become more knowledgeable of the town and the local area.

\[ 2t = 22 \]

<table>
<thead>
<tr>
<th>1 Definitely</th>
<th>2 Pretty sure</th>
<th>3 Not very likely</th>
<th>4 Not at all</th>
<th>5 Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>11</td>
<td>6</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Pre | Post

GLO2

**Hammersby2B1**

Pre - I will become more aware of how I can use museum objects to communicate subject matter.
Post - I have become more aware of how I can use museum objects to communicate subject matter.

\[ 2t = 22 \]

<table>
<thead>
<tr>
<th>1 Definitely</th>
<th>2 Pretty sure</th>
<th>3 Not very likely</th>
<th>4 Not at all</th>
<th>5 Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>14</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

Pre | Post

GLO2

**Hammersby2B2**

Pre - I will become more confident when I have to explain the subject(s) to others orally.
Post - I have become more confident when I have to explain the subject(s) to others orally.

\[ 2t = 22 \]

<table>
<thead>
<tr>
<th>1 Definitely</th>
<th>2 Pretty sure</th>
<th>3 Not very likely</th>
<th>4 Not at all</th>
<th>5 Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>11</td>
<td>13</td>
<td>7</td>
<td>6</td>
</tr>
</tbody>
</table>

Pre | Post
Chapter Appendix

**GLO2**

<table>
<thead>
<tr>
<th>Hammersby2tB3</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre - I will gain insight into how the museum presents knowledge about objects through exhibits.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post - I gained insight into how the museum presents knowledge about objects through exhibits.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$2t = 22$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- 3 Definitely
- 15 Pretty sure
- 17 Not very likely
- 3 Not at all
- 4 Do not know

**GLO2**

<table>
<thead>
<tr>
<th>Hammersby2tB4</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre - By working at the museum and with museum objects, I will become more aware of how I learn.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post - By working at the museum and with museum objects, I have become more aware of how I learn.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$2t = 22$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- 1 Definitely
- 13 Pretty sure
- 12 Not very likely
- 8 Not at all
- 5 Do not know

**GLO2**

<table>
<thead>
<tr>
<th>Hammersby2tB5</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre - I will become better at formulating subject-related questions by having to put them to museum employees.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post - I have become better at formulating subject-related questions by having to put them to museum employees.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$2t = 22$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- 1 Definitely
- 15 Pretty sure
- 8 Not very likely
- 3 Not at all
- 8 Do not know

- 1 Definitely
- 1 Pretty sure
- 3 Not very likely
- 1 Not all
- 5 Do not know

- 2 Definitely
- 8 Pretty sure
- 8 Not very likely
- 5 Not all
- 2 Do not know

50
Chapter Appendix

GLO2

Hammersby2tB6
Pre - I will become aware of how I can use the museum in relation to school work.
Post - I have become aware of how I can use the museum in relation to school work.

2t = 22

GLO2

Hammersby2tB7
Pre - I will become better at working in groups.
Post - I have become better at working in groups.

2t = 22

GLO2

Hammersby2tB8
Pre - I will discover that our group work functions differently at the museum than it does at school.
Post - I discovered that our group work functioned differently at the museum than it does at school.

2t = 22
Hammersby2tC1
Pre - I will experience new things about my classmates.
Post - I have experienced new things about my classmates.
2t = 22

Hammersby2tC5
Pre - I will discover new things about my teachers.
Post - I have discovered new things about my teacher(s).
2t = 22

Hammersby2tD1
Pre - Being at the museum will be inspiring to me when I do the coursework.
Post - Being at the museum was inspiring to me when I did the coursework.
2t = 22
Hammersby 2tD2
Pre - I will discover that being at the museum makes it fun to do the coursework.
Post - I discovered that being at the museum made it fun to do the coursework.

$2t = 22$

Hammersby 2tE1
Pre - Being at the museum will motivate the groups and my classmates and me to act differently...
Post - Being at the museum motivated the groups and my classmates and me to act differently...

$2t = 22$

Hammersby 2tE3
Pre - I will be more likely to use the museum for school work after completing this coursework.
Post - I am more likely to use the museum for school work after completing this coursework.

$2t = 22$
Chapter Appendix

GLO5

Hammersby

Pre - I will be more likely to visit the museum in my spare time after this completing this coursework.

Post - I am more likely to visit the museum in my spare time after this completing this coursework.

$2t = 22$

Brigby

Pre - I will be more likely to use the museum for school work after completing this coursework.

Post - I am more likely to use the museum for school work after completing this coursework.

$1x = 11, 1z = 19$

Brigby

Pre - I will be more likely to visit the museum in my spare time after this completing this coursework.

Post - I am more likely to visit the museum in my spare time after this completing this coursework.

$1x = 11, 1z = 19$
| 1. Student - student |  |  |  |  |
|----------------------|-----------------------------|-----------------------------|-----------------------------|
| **Brigby**           | **Hammersby**               |                             |
| Free-choice learning; self-determination; everyone was equal; more relaxed; greater concentration; no one was right or wrong; everyone was more open; personal opinions were valid; new constellations of students positive experience; considerate of other groups’ work; small tablet screen physical closeness of group members; within-group frustration and loss of attention and focus due to difficulty of the task; some students did not take the work seriously; disappointment in the groups about not participating in the battle | Free-choice learning; self-determination; new constellations of students positive experience; got practice collaborating in new constellations; The way the groups were organized was good different skills and strengths group members learned from each other; discovered new skills and strengths in group members; creative thinking was appreciated; realized that the learning environment gave classmates who were not strong book-learners an opportunity to contribute successfully; they were motivated by having an authentic audience and worked hard |

| 2. Students - teachers |  |  |  |  |
|------------------------|-----------------------------|-----------------------------|-----------------------------|
| **Students**           | **Teachers**                |                             |                             |
| “Equal” relationship; Asked teacher for help at the museum, not the expert; No assessment relief; Teacher’s presence assessment after all; Not clear beforehand about what was going to happen at the museum | Relinquished authority; More informal relationship; Could not help the students with the program; Kept an eye on the students; Avoided answering subject-related questions because the students were doing the museum’s coursework; Not clear beforehand about what was going to happen at the museum | The teachers were open and congenial; The teachers were excited about the coursework | The teachers were open and congenial; The teachers were excited about the coursework |

| 2. Students - adults |  |  |  |  |
|----------------------|-----------------------------|-----------------------------|-----------------------------|
| **Students**         | **Museum professional**     |                             |                             |
| Hesitant about asking an expert; No right or wrong answers; Felt welcome; The MEO was motivating; The MEO was helpful and knowledgeable; Nervous about appearing ill-informed; More subdued and formal with the MEO; Shyness during the Battle; | Introduced the program, the exhibit and the museum; No right or wrong answers; Many questions about the tablet PC and the program; Avoiding answering questions about content the students should make up their own minds Explained and directed the Battle with two groups; Asked the students for feedback about the program before they left; Got good feedback from the students | Got practice talking with experts; It was interesting and inspiring to get to know the museum experts; Were impressed by the museum experts’ knowledge; Doing archery got them interested in the topic; Discovered that museum professionals are interesting and helpful and dedicated to their work but have a different approach to teaching; The museum professionals gave them unique knowledge and guidance; Presented their product at the reception at the museum; Their work was taken seriously | Got practice talking with the students, who were open, receptive and polite – and ambitious and asked qualified questions; Invited the students behind the scenes at the museum; Instructed each group in how to shoot the bow and arrows; Students stayed late to practice shooting; Instructed each group in how to use the archives’ database; Visited the students at school; Helped the students – at school – with presentation preparation; Listened to some of the presentations and gave feedback; Organized a reception for the students and invited them to speak |

Fig. 10a A comparison of the social aspect of students’ learning experience in the Brigby and Hammersby cases
Chapter Appendix

GLO5

Total WOHammersbyE3
Pre - I will be more likely to use the museum for school work after completing this coursework.
Post - I am more likely to use the museum for school work after completing this coursework.
Total = 58

GLO5

Total WOHammersbyE4
Pre - I will be more likely to visit the museum in my spare time after completing this coursework.
Post - I am more likely to visit the museum in my spare time after completing this coursework.
Total = 58
Chapter Appendix

Chapter 11 Shoresby Gymnasium and Shoresby Museum
Ill. 11a

Ill. 11b
Ill. 11e

Ill. 11f
Chapter Appendix

Chapter 12 Cranwell and Shoresby Museum

Cranwell Total A1
Pre - My knowledge of the subject(s) in the coursework will be increased
Post - My knowledge of the subject(s) in the coursework has been increased
3oc = 15, 3oe=6

GLO1

<table>
<thead>
<tr>
<th>1 Definitely</th>
<th>2 Pretty sure</th>
<th>3 Not very likely</th>
<th>4 Not at all</th>
<th>5 Do not know</th>
<th>1 Definitely</th>
<th>2 Pretty sure</th>
<th>3 Not very likely</th>
<th>4 Not at all</th>
<th>5 Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>6</td>
<td>11</td>
<td>8</td>
<td></td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

Cranwell Total A2
Pre - My understanding of how the subject(s) of the coursework differ from other subjects will be increased.
Post - My understanding of how the subject(s) of the coursework differ from other subjects has been increased.
3oc = 15, 3oe=6

GLO1

<table>
<thead>
<tr>
<th>1 Definitely</th>
<th>2 Pretty sure</th>
<th>3 Not very likely</th>
<th>4 Not at all</th>
<th>5 Do not know</th>
<th>1 Definitely</th>
<th>2 Pretty sure</th>
<th>3 Not very likely</th>
<th>4 Not at all</th>
<th>5 Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>6</td>
<td>9</td>
<td>6</td>
<td></td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Cranwell Total A3
Pre - My understanding of how the subject(s) can be applied in practice will be increased.
Post - My understanding of how the subject(s) can be applied in practice has been increased.
3oc = 15, 3oe=6

GLO1

<table>
<thead>
<tr>
<th>1 Definitely</th>
<th>2 Pretty sure</th>
<th>3 Not very likely</th>
<th>4 Not at all</th>
<th>5 Do not know</th>
<th>1 Definitely</th>
<th>2 Pretty sure</th>
<th>3 Not very likely</th>
<th>4 Not at all</th>
<th>5 Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>4</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
CranwellTotalA4

Pre - I will gain insight into how museum objects can be used to create knowledge.
Post - I have gained insight into how museum objects can be used to create knowledge.
3oc = 15, 3oe=6

GLO1

CranwellTotalA5

Pre - I will become aware of how knowledge is interpreted differently at school and at the museum.
Post - I have become aware of how knowledge is interpreted differently at school and at the museum.
3oc = 15, 3oe=6

GLO1

CranwellTotalA6

Pre - I will gain insight into how the museum functions.
Post - I have gained insight into how the museum functions.
3oc = 15, 3oe=6
**Chapter Appendix**

### GLO1
**CranwellTotalA7**

**Pre** - I will become more knowledgeable of the town and the local area.

**Post** - I have become more knowledgeable of the town and the local area.

3oc = 15, 3oe=6

### GLO5
**CranwellTotalE1**

**Pre** - Being at the museum will motivate the groups and my classmates and me to act differently...

**Post** - Being at the museum motivated the groups and my classmates and me to act differently...

3oc = 15, 3oe=6

### GLO5
**CranwellTotalE2**

**Pre** - We students will make an effort to make a good impression on the museum staff.

**Post** - We students made an effort to make a good impression on the museum staff.

3oc = 15, 3oe=6
Chapter Appendix

**GLO5**

**Cranwell Total E3**

Pre - I will be more likely to use the museum for school work after completing this coursework.

Post - I am more likely to use the museum for school work after completing this coursework.

3oc = 15, 3oe=6

---

**GLO5**

**Cranwell Total E4**

Pre - I will be more likely to visit the museum in my spare time after this completing this coursework.

Post - I am more likely to visit the museum in my spare time after this completing this coursework.

3oc = 15, 3oe=6
Chapter 13 Westby Gymnasium & HF and Westby Museum

GLO1

<table>
<thead>
<tr>
<th></th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Definitely</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>2 Pretty sure</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>3 Not very likely</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>4 Not at all</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>5 Do not know</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

Westby3xA3

Pre - My understanding of how the subject(s) can be applied in practice will be increased.
Post - My understanding of how the subject(s) can be applied in practice has been increased.
$3x = 7$

GLO1

<table>
<thead>
<tr>
<th></th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Definitely</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2 Pretty sure</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>3 Not very likely</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>4 Not at all</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>5 Do not know</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

Westby3xA4

Pre - I will gain insight into how museum objects can be used to create knowledge.
Post - I have gained insight into how museum objects can be used to create knowledge.
$3x = 7$

GLO2

<table>
<thead>
<tr>
<th></th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Definitely</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2 Pretty sure</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>3 Not very likely</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>4 Not at all</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5 Do not know</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Westby3xB2

Pre - I will become more confident when I have to explain the subject(s) to others orally.
Post - I have become more confident when I have to explain the subject(s) to others orally.
$3x = 7$
Westby\textsubscript{3x}E3

Pre - I will be more likely to use the museum for school work after completing this coursework.
Post - I am more likely to use the museum for school work after completing this coursework.

\[3x = 7\]

Westby\textsubscript{3x}E4

Pre - I will be more likely to visit the museum in my spare time after completing this coursework.
Post - I am more likely to visit the museum in my spare time after completing this coursework.

\[3x = 7\]
Appendix Common Graphs

Graph Prep...............................................................................................................................................1

Graph Eval..................................................................................................................................................2

Table Inventory of Pre- and Post-survey answers – all classes .................................................................3

Graph Prep

<table>
<thead>
<tr>
<th>Preparation (pre-visit)</th>
<th>Subject-related work in the subject(s) of the coursework</th>
<th>Reading texts from the museum during the subject-related preparations in class</th>
<th>Checking out the museum’s website in order to learn something about the museum</th>
<th>A visit by a museum interpreter, who sat in on at least one of your lessons</th>
<th>A visit and a talk by a museum interpreter, where he or she told you about what the museum does</th>
<th>A review of how one behaves when visiting a museum</th>
<th>Practical preparations, e.g. time tables and bus schedules</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1z 1 13</td>
<td>1x 0 5</td>
<td>2t 1 7</td>
<td>3x 4 13</td>
<td>3oc 0 0</td>
<td>3oe 0 0</td>
<td>1z 17 11 20 4 2 3</td>
</tr>
</tbody>
</table>

1 2 3
### Appendix Common Graphs

#### Graph Eval

<table>
<thead>
<tr>
<th>Evaluation (post-visit)</th>
<th>1z</th>
<th>1x</th>
<th>2t</th>
<th>3x</th>
<th>3oc</th>
<th>3oe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral evaluation of the visit to the museum</td>
<td>15</td>
<td>6</td>
<td>11</td>
<td>7</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Written evaluation of the visit to the museum</td>
<td>1</td>
<td>0</td>
<td>9</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Doing school assignments that drew upon your experiences at the museum</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Your teacher(s) has/have referred to the museum visit in class</td>
<td>4</td>
<td>1</td>
<td>8</td>
<td>4</td>
<td>7</td>
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<tr>
<td>Your teacher(s) has/have evaluated the assignments done at the museum</td>
<td>0</td>
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<td>3</td>
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<tr>
<td>Your teacher(s) has/have remarked on the class’ behavior at the museum</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
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<tr>
<td>A museum interpreter has visited the class and participated in an evaluation of the visit to the museum</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>0</td>
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### Table Inventory of Pre- and Post-survey answers – all classes

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<th>Total post</th>
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<tr>
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<td>3oc 15</td>
<td>17</td>
<td>19</td>
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<tr>
<td>Cranwell HHX</td>
<td>3oe 6</td>
<td>21</td>
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<td>Hammersby Gymnaisum og HF</td>
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<td>27</td>
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<tr>
<td>Westby Gymnasium &amp; HF</td>
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## Table 9.1 GLO 1 x Frederick, Rita, Mary

<table>
<thead>
<tr>
<th>Content (GLO1)</th>
<th>Frederick</th>
<th>Rita</th>
<th>Mary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Understanding connections between activities, e.g. Argument Cards and debate</strong></td>
<td>During the debate, articulating the arguments on the Argument Cards in one’s own words furthered one’s learning; Listening to the other group’s arguments during the debate revealed a new way to look at the painting</td>
<td>The Argument Cards were confusing and difficult to understand; The debate “gathered the loose ends” and made the purpose of the assignment clearer; The Argument Cards made the overall experience bad; Learning the method of how to see painting from more than one angle was memorable</td>
<td>It was difficult to relate the assignment to the painting; It did not feel natural to use the arguments on the Argument Cards; The level of the Argument Cards was too advanced; The debate “gathered the loose ends” and created cohesion</td>
</tr>
<tr>
<td><strong>Subject-related learning and relevancy (Danish and History)</strong></td>
<td>In relation to Danish lessons in school, the museum program was two months too late so the topic was not fresh in his mind, making it difficult to apply his knowledge; The museum program did not seem related to lessons at school; Does not know what to use the museum learning experience for</td>
<td>In relation to Danish lessons in school, the museum program was too late; It would have been more relevant in connection to a different topic.</td>
<td>Working with paintings like this could be used in relation to a written assignment in Danish; Using the tablet PCs gave one insight into some history (e.g. Grundtvig); The program mirrored theory used in Danish and it was exciting to use it in the analysis of a painting</td>
</tr>
<tr>
<td><strong>Learning about the museum</strong></td>
<td>One can learn a lot at a museum if one studies its signs, etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Understanding about learning</strong></td>
<td>Museum learning is active learning; Visiting the museum is more an experience than it is learning; It is not like a school lesson because the museum person is not a teacher; Seeing real objects helps one remember; The fact that the school teacher is there makes one take the museum program more seriously</td>
<td>It is interesting at the museum but one does not get new knowledge; Getting out of the classroom and experiencing someone else’s teaching makes it interesting; Doing the program at the museum is not considered a means of gaining new knowledge</td>
<td>One remembers better if learning is accompanied by experiences; Not being assessed while working at the museum is relaxing and makes one feel freer and better able to concentrate; All the students are at the same level of knowledge at the museum so everyone has an equal say – there is no “right” or “wrong”</td>
</tr>
</tbody>
</table>
### Table 9.2 GLO 2 1x Frederick, Rita, Mary

<table>
<thead>
<tr>
<th>Content (GLO2)</th>
<th>Frederick</th>
<th>Rita</th>
<th>Mary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication skills</td>
<td>During the debate, articulating the arguments on the Argument Cards in one’s own words was a learning experience</td>
<td>Asked the teacher instead of the museum educator so as not to appear dull in front of a stranger</td>
<td>Asked the teacher instead of the museum educator so as not to appear dull in front of a stranger</td>
</tr>
<tr>
<td>Social skills</td>
<td>The way the groups worked together was no different than at school; Working harder because they were working in groups. Helped one another to learn.</td>
<td>The way the groups worked together was no different than at school</td>
<td>The way the groups worked together was no different than at school</td>
</tr>
<tr>
<td>Being able to do new things (e.g. seeing things from more than one angle)</td>
<td>Learned how to use the tablet PC; Learned how to look at a topic from more than one angle</td>
<td>Learned how to use the tablet PC; Learned how to look at a topic from more than one angle; Did not learn how to use the Argument Cards</td>
<td>Learned how to use the tablet PC; Analyzing the paintings according to the program at the museum was not a good experience. It was too hard and complicated; The Argument Cards were too hard and did not feel natural to use; Understanded that subject-related theory can be used in a different context</td>
</tr>
<tr>
<td>Intellectual skills (e.g. becoming more critical)</td>
<td>Became more critical in his analytical approach</td>
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</tbody>
</table>

### Table 9.3 GLO 3 1x Frederick, Rita, Mary

<table>
<thead>
<tr>
<th>Content (GLO3)</th>
<th>Frederick</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Positive and negative attitudes in relation to an experience</td>
<td>It was a fun way to learn because it was active; It was fun to use the tablet PC</td>
<td>Predicted that in a few years, she will not be able to remember the arguments and statements if the RomanticArt program</td>
<td>It was different to use the tablet PC</td>
</tr>
<tr>
<td>Motivation</td>
<td>Participating in the debate and being able to use one’s knowledge; Having fun motivates one to learn; The teacher’s presence was motivating;</td>
<td>Not being able to figure out the program and the assignment or what the objective was caused frustration in the group → starting talking about other things;</td>
<td>It was difficult to relate the assignment to the painting; It did not feel natural to use the arguments on the Argument Cards; The level of the</td>
</tr>
</tbody>
</table>
The students who were not going to do a paper on National Romanticism did not have to take the visit so seriously. Seeing the authentic works of art was not super motivating; it is motivating when there are changes in the routine at school; it is fun to have someone other than the teacher teach once in a while. Argument Cards was too advanced.

**Feelings**

In relation to Danish lessons in school, the museum program was two months too late; feeling “What was the point?”

In relation to Danish lessons in school, the museum program was too late. Was not able to do the task [analyze the painting]; Doing the work at school would have been more worthwhile.

**Perceptions**

When other people are interested and having fun, it rubs off.

Being responsible for one’s own learning can be perceived as “dangerous” for some students. Not being assessed is a relief sometimes.

**Attitude towards an organization (e.g. the museum)**

The education officer’s enthusiasm and helpfulness were very motivating.

The education officer did a good job; it is generally interesting to go on a field trip to learn about something and it was at Brigby Art Museum, too; Young people want to see something other than paintings at an art museum; Unchanged attitude towards museums. Opted out of using the museum for school work despite the fact that it was fun being there; Bigger art museums that show more than just paintings are preferable.

**Table 9.4 GLO 4 1x Frederick, Rita, Mary**

<table>
<thead>
<tr>
<th>Content (GLO4)</th>
<th>Frederick</th>
<th>Rita</th>
<th>Mary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Having fun</strong></td>
<td>The group work was fun; It was a fun way to learn because it was active; It was fun to use the tablet PC</td>
<td>It is nice to get out of the classroom; It is sometimes fun to be taught by someone other than one’s teacher; It makes it more fun to learn if one has fun at the same time</td>
<td></td>
</tr>
<tr>
<td><strong>Being surprised</strong></td>
<td></td>
<td>There were aspects of the sound and light show that were surprising and funny</td>
<td></td>
</tr>
<tr>
<td><strong>Innovative thoughts</strong></td>
<td></td>
<td>Analyzing the artwork using the program’s arguments was too</td>
<td></td>
</tr>
</tbody>
</table>

3
Exploration, experimentation and making

| Explorations, experimentation and making | It was interesting but not exceptional to see the authentic painting instead of a photo of it; It was not especially inspiring to see the paintings | The sound and light show was kind of silly and did not add anything to the experience of the painting | Frustration with the work caused the group to talk about other things that the task at hand |

<table>
<thead>
<tr>
<th>Being inspired</th>
<th>Frederick</th>
<th>Rita</th>
<th>Mary</th>
</tr>
</thead>
<tbody>
<tr>
<td>What people intend to do</td>
<td>Not likely to use the museum as a research resource for school assignments</td>
<td>Working in groups at the museum was no different from working in groups at school; At the museum, the students were more polite and better at keeping quiet though that did not mean they were paying attention; Did not want to ask museum educator questions for fear of appearing dull or ill-informed</td>
<td>Working in groups at the museum was no different from working in groups at school; Did not want to ask the museum educator questions for fear of appearing dull or ill-informed</td>
</tr>
<tr>
<td>Actions (reported or observed)</td>
<td>Working in groups at the museum was no different from working in groups at school; At the museum, the students were more polite and better at keeping quiet though that did not mean they were paying attention; Did not want to ask museum educator questions for fear of appearing dull or ill-informed</td>
<td>Working in groups at the museum was no different from working in groups at school; Did not want to ask the museum educator questions for fear of appearing dull or ill-informed</td>
<td>Working in groups at the museum was no different from working in groups at school; Did not want to ask the museum educator questions for fear of appearing dull or ill-informed</td>
</tr>
<tr>
<td>Change in behavior</td>
<td>His behavior at museums will not change as a result of the museum experience; Not more or less likely to visit museums in the future; Students are used to being in the classroom, and the atmosphere there is relaxed; when they are in a new environment, they behave politely and are willing to do some work</td>
<td>At the museum, the atmosphere between the students and their teacher changed</td>
<td>The students’ teacher did not know more about the program than the students; She might use a larger, “more modern” museum with modern art in connection with school work</td>
</tr>
</tbody>
</table>

Table 9.5 GLO 5 1x Frederick, Rita, Mary

<table>
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<th>Frederick</th>
<th>Rita</th>
<th>Mary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content (GLOS)</td>
<td>Frederick</td>
<td>Rita</td>
<td>Mary</td>
</tr>
<tr>
<td>What people intend to do</td>
<td>Not likely to use the museum as a research resource for school assignments</td>
<td>Working in groups at the museum was no different from working in groups at school; At the museum, the students were more polite and better at keeping quiet though that did not mean they were paying attention; Did not want to ask museum educator questions for fear of appearing dull or ill-informed</td>
<td>Working in groups at the museum was no different from working in groups at school; Did not want to ask the museum educator questions for fear of appearing dull or ill-informed</td>
</tr>
<tr>
<td>Actions (reported or observed)</td>
<td>Working in groups at the museum was no different from working in groups at school; At the museum, the students were more polite and better at keeping quiet though that did not mean they were paying attention; Did not want to ask museum educator questions for fear of appearing dull or ill-informed</td>
<td>Working in groups at the museum was no different from working in groups at school; Did not want to ask the museum educator questions for fear of appearing dull or ill-informed</td>
<td>Working in groups at the museum was no different from working in groups at school; Did not want to ask the museum educator questions for fear of appearing dull or ill-informed</td>
</tr>
<tr>
<td>Change in behavior</td>
<td>His behavior at museums will not change as a result of the museum experience; Not more or less likely to visit museums in the future; Students are used to being in the classroom, and the atmosphere there is relaxed; when they are in a new environment, they behave politely and are willing to do some work</td>
<td>At the museum, the atmosphere between the students and their teacher changed</td>
<td>The students’ teacher did not know more about the program than the students; She might use a larger, “more modern” museum with modern art in connection with school work</td>
</tr>
</tbody>
</table>
Understood that one can learn a lot from studying museum signs and other materials; Understood that the experience of looking at a painting from several angles can be transferred to other learning contexts

[As a result of the interview] she realized that the museum experience was supposed to have been a learning experience

Understood that the museum could be used in connection to Danish assignments but admitted that this would not be something that she would ever choose to do; Admitted that it might be possible to use the RomanticArt approach in connection with school work

### Table 9.6 Learning School cmp. to museum 1x Frederick, Rita, Mary

<table>
<thead>
<tr>
<th>School learning</th>
<th>Frederick</th>
<th>Rita</th>
<th>Mary</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is a lot of variation in how lessons are taught at school, e.g. using smart boards, computers, books, blackboards; Most lessons take place in the classroom; The teacher knows a little bit about a lot of things</td>
<td>Most lessons take place in the classroom</td>
<td>The students learn a lot from the teacher but also from each other; When one puts one’s hand up to answer a question in school, one’s answer had better be correct; Answers at school are assessed and determine one’s grade</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Museum learning</th>
<th>Frederick</th>
<th>Rita</th>
<th>Mary</th>
</tr>
</thead>
</table>
| It is up to oneself to absorb the information made available; There is no teacher at the museum so it is up to oneself what one wants to get out of it; The museum educator is an expert; He was still being assessed because the teacher was at the museum this helped him focus; One does not realize how much one learns at the museum; Doing the program at the museum did not feel like a lesson because he is used to being taught by a teacher | It was more interesting to be at the museum but she did not gain any new knowledge; The education officer was an expert and the student did not want to appear dull or ill-informed so did not ask her questions; she asked the teacher instead; It was relaxing to be at the museum but she had still wanted to learn something | There was no one who told the students to remember to do this and that; it was up to themselves; Maybe it is easier to learn and remember at a museum because it is an experience at the same time; It was fun to try doing things differently, but more would been learned in school; Learning at a museum is “dangerous” because it is up to oneself to learn; The teacher is not an expert at the museum so one has to ask the museum person, which can be a small challenge in itself; Not being assessed makes one feel freer and better able to concentrate; Everyone is at the same level; nobody is “more in
the know” than others so different answers are allowed. It is not so serious as in school; Sometimes it is nice not to be assessed; One is not always completely clear about one’s learning outcomes at the museum

<table>
<thead>
<tr>
<th>Table 9.7 GLO 1 1z Aretha, Drew, Martha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content (GLO1)</td>
</tr>
<tr>
<td>Understanding connections between activities, e.g. Argument Cards and debate</td>
</tr>
<tr>
<td>Subject-related learning and relevancy (Danish and History)</td>
</tr>
<tr>
<td>Learning about the museum</td>
</tr>
<tr>
<td>Understanding about learning</td>
</tr>
</tbody>
</table>
same level of knowledge at the museum so everyone has an equal say – there is no “right” or “wrong”

### Table 9.8 GLO 2 1z Aretha, Drew, Martha

<table>
<thead>
<tr>
<th>Content (GLO2)</th>
<th>Aretha</th>
<th>Drew</th>
<th>Martha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication skills</td>
<td>The others in her group were classmates she would not normally talk with; the fact that their work was not being assessed made it easy for them to talk together</td>
<td>When the group asked questions of the education officer, they were more subdued than normal because she was a stranger</td>
<td></td>
</tr>
<tr>
<td>Social skills</td>
<td>The students are used to working in groups and their group work at the museum was good; it was more relaxed because their work was not going to be graded; Personal opinions were accepted; When people are on the same level, group work is better; this is something that can be used in other contexts as well</td>
<td>Once in a while it is alright to be put in groups with classmates with whom one does not normally talk, just not too often</td>
<td></td>
</tr>
</tbody>
</table>

### Table 9.9 GLO 3 1z Aretha, Drew, Martha

<table>
<thead>
<tr>
<th>Content (GLO 3)</th>
<th>Aretha</th>
<th>Drew</th>
<th>Martha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive and negative attitudes in relation to an experience</td>
<td>Frustrated by not being given the opportunity to talk about her group’s painting and what they had learned; It was easy to talk with the others in the group because their work was not being assessed</td>
<td>Had expected the visit to be boring but it turned out to be fun; The tablet PCs made it interesting; it was a welcome break from just writing their answers down on paper</td>
<td>The education officer should have made it clear that not everyone would get to talk about their paintings; Annoyed that she and her group were not given the opportunity to talk about their painting and what they had learned;</td>
</tr>
</tbody>
</table>
Her expectations of participating in a debate were disappointed when only two groups were chosen.

Motivation
The museum organized a special event which was something the students had never tried before and was outside of school (broke the routine); They were given the opportunity to take the initiative to discover what they wanted to know; They were allowed to move around at their own discretion; Being allowed to decide for oneself is motivating

Being allowed to decide for oneself is motivating

Feelings
The light and sound show helped her enter into the spirit of the painting

The light and sound show did not help her to enter into the spirit of the painting mainly because the other students distracted her

Perceptions
One learns more when one is motivated and engaged; Not being assessed made the process more relaxed; she felt she had time to become absorbed in the task at hand; others might choose not to learn anything because it was not required

It would have been better if everyone's paintings had been discussed; it was fun to see the debate but the lookers-on did not learn much; It was liberating that their work was not being assessed; there was less pressure

One learns more when one is motivated and engaged

Attitude towards an organization (e.g. the museum)
This was a special event; on an ordinary day, the museum would be as it usually is so her attitude is unchanged; It was fun and an exciting, positive experience to visit the museum; the building was cozy and she felt welcome; Her mother did not know that there was an art museum in town

The exhibition room was cozy; This was a special event; on an ordinary day, the museum would be as it usually is so his attitude is unchanged

She had visited many museums; her attitude is unchanged; She felt welcome

Table 9.10 GLO 4 1z Aretha, Drew, Martha

<table>
<thead>
<tr>
<th>Content (GLO4)</th>
<th>Aretha</th>
<th>Drew</th>
<th>Martha</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Having fun</strong></td>
<td>Participating in the program was fun and engaging; Time passed quickly while they were at the museum so they must have been having a good time</td>
<td>It was fun to use the tablet PC</td>
<td>Having fun makes it easier to learn</td>
</tr>
<tr>
<td><strong>Being surprised</strong></td>
<td>Had expected the museum visit to be boring but found out it</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Creativity

The atmosphere was relaxed and there was room for them to decide for themselves how they wanted to work with the program (e.g. reading aloud for each other)

Exploration, experimentation and making

The light and sound show helped her enter into the painting; it was a personal experience that was not used in their group work; It was good that they could look around the exhibit on their own; One learns more if one gets to choose for oneself what to look at and study to do the assignment

Being inspired

It was great that they could look at the original paintings instead of copies

<table>
<thead>
<tr>
<th>Creativity</th>
<th>was fun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploration, experimentation and making</td>
<td>Did not use the experience of the light and sound show in their group work; It was good that they could look around the exhibit on their own; One learns more if one gets to choose for oneself what to look at and study to do the assignment</td>
</tr>
<tr>
<td>Being inspired</td>
<td>Not being able to discuss what she had learned about the painting was a disappointment</td>
</tr>
</tbody>
</table>

Table 9.11 GLO 5 1z Aretha, Drew, Martha

<table>
<thead>
<tr>
<th>Content (GLOS)</th>
<th>Aretha</th>
<th>Drew</th>
<th>Martha</th>
</tr>
</thead>
<tbody>
<tr>
<td>What people intend to do</td>
<td>Would have used what she had learned at the museum if it had fit what they were working with in class; Does not think she will start going to the museum to look at paintings for school work; Thinks she will be able to use what she learned in her group work in other contexts (the fact that they were all equally “in the know” at the museum)</td>
<td>Would not use the museum for school work; he would Google what he needed to find; Might visit the museum in his leisure time if there was some kind of event or a program like RomanticArt</td>
<td>If she was to analyze a painting that was at the museum, she might go there to see the original; Would not visit the museum to look at a painting just for fun</td>
</tr>
<tr>
<td>Actions (reported or observed)</td>
<td>The students were especially engaged and active; Some of the students walked around to look at the paintings</td>
<td>Was quieter than normal at the museum but otherwise unchanged in his behavior</td>
<td>She and the others in her group were quieter than normal</td>
</tr>
<tr>
<td>Change in behavior</td>
<td>Thinks she might visit the museum with her family</td>
<td></td>
<td>She and the others in her group wanted to make a</td>
</tr>
</tbody>
</table>
if there was an interesting event there, though she herself would not take the initiative to do so; Would be more likely to become involved if she herself could DO something while she was there; She visits the big art museum in Aarhus as a leisure time activity

good impression because they were in a new place; The room was not very big so they had to quieter than normal so as not to disturb the other groups too much; Would not be likely to visit the museum unless there was something she wanted to study there; If she needed some information to do some school work, she might visit a museum

They did not use the sound and light show experience in their group work; To use what she had learned at the museum in a paper for school, she would need to know what the other groups’ arguments were

To use what she had learned at the museum for school work, she would have to go more into depth with it

Table 9.12 Learning School cmp. to museum 1z Aretha, Drew, Martha

<table>
<thead>
<tr>
<th>School learning</th>
<th>Aretha</th>
<th>Drew</th>
<th>Martha</th>
</tr>
</thead>
<tbody>
<tr>
<td>At school the atmosphere is more hectic [than at a museum]</td>
<td>Lessons are often characterized by routines</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Museum learning</th>
<th>Aretha</th>
<th>Drew</th>
<th>Martha</th>
</tr>
</thead>
<tbody>
<tr>
<td>More individualized; it is up to oneself what one wants to get out of being there; One can look at paintings that were actually painted by an artist; The novelty of working at the museum makes one more attentive and engaged; At a museum the atmosphere is calm and one has time to look around and see what is actually happening; Being at the museum was more relaxed because what they were doing was not for a grade and the students did not have to do the work; it was up to the students to major</td>
<td>The room at the museum is very different, it is very cozy; It is liberating not to be assessed; there is no pressure; They were more subdued when they asked the museum officer questions because it was the first time they had met her</td>
<td>One decides for oneself what one wants to get out of the painting; There are paintings everywhere – that makes the room very different; One can see originals instead of copies; One is not nearly as busy [as in school]; One can sit on the floor, talk with the others, get up, move around and look at other paintings; it is up to oneself; Her group was quieter than usual because they wanted to make a good impression; It did not matter whether it was the teacher or the education officer at the museum</td>
<td></td>
</tr>
</tbody>
</table>

10
themselves; It did not matter whether it was the teacher or the education officer at the museum when they asked questions; Everyone was equal at the museum which made group work easier and more open

Table 9.13 Collaboration Adults Brigby

<table>
<thead>
<tr>
<th>Description of the collaboration</th>
<th>Tammy (M) 1st year of collaboration:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The first meetings were for brain-storming but soon became concrete plans for coursework; RomanticArt was a continuation of the first coursework which Tammy, Harold and Dorothy developed and carried out; Close collaboration with two teachers (Harold and Dorothy) and a number of students to ensure RomanticArt’s value as teaching material, e.g. historical correctness, appropriate pedagogic and didactic framing, etc. Grateful for and very pleased with the collaboration with the teachers; The teachers also seemed pleased with the collaboration though she and they did not actually evaluate it; RomanticArt was developed by the museum and then tested on the students, the focus group and evaluated by the teachers; Very confident that collaboration about museum-based teaching material is a win-win situation; It would be a good idea for the museum to visit the school as well; The collaboration would benefit from long-term planning and a certain degree of formalization, meaning becoming more dedicated to each other, but that would require changing both institutions’ conventional way of thinking and course of action; The collaboration needs to be balanced so that neither institution becomes tired of the other 2nd year of collaboration [between Tammy and Heather and Beth]: Tammy did not mention Beth or Heather when she spoke about collaborating with the school</td>
</tr>
<tr>
<td></td>
<td>Harold (G) 1st year of collaboration:</td>
</tr>
<tr>
<td></td>
<td>They spent nearly a year developing the first intrface coursework, planning everything in detail as teaching material for 1st year students preparing for and doing their Danish-History paper; Tammy visited the school and gave a talk to the students about the museum and its role in society, its functions, etc.; The students learned about the museum from Tammy and about National Romanticism from their teachers; The museum was very flexible and helped the students whenever it suited them; The reports were used afterwards to evaluate the value and effect of the coursework; They evaluated the coursework with the students [they were generally positive]; When developing the coursework, they discussed e.g. learning outcomes, pedagogic and didactic framing, etc. Harold and Dorothy were consultants on the development of RomanticArt which was inspired by the intrface project; 2nd year of collaboration:</td>
</tr>
</tbody>
</table>
This year, his colleagues are using the museum differently, more “like taking a textbook off the shelf. They cannot relate to the project in the same way as those who developed it;”¹

The museum is developing a mobile application, which is not teaching material for the gymnasium, which they are going to test on a group of students from the gymnasium; It is interesting to see how a museum can be transformed by being mediated on - and thereby becoming even more accessible - on APPs and iPads;

**In general:**
Collaboration means that the museum is involved in planning lessons and materials for the students, a process which is normally organized 100% by the teachers;
The interface concept has changed the way the school uses museums – earlier teachers would just book a guided tour and now the school contributes to targeting the museum’s educational offerings to the curriculum and syllabus of a given class or year;
The collaboration has been formalized, meaning that there is permanently an open door between the museum and the school - Harold has been made interface liaison officer;
The school’s management is very supportive of the interface concept and the school’s partnerships with museums;
The school has decided to focus on continuing to develop the partnership with Brigby Art Museum instead of extending school-museum collaboration to other museums²

Collaboration must be more than merely having a contact person at the other institution; It must not become cumbersome, but should provide relevant, ready-made solutions for teachers

| Heather (G) (1z) | During their visit at the museum, she walked around quietly among the students to see if they needed help and then referred them to Tammy – she could not help them herself, as she was not familiar with the program;
| | Her role at the museum was to be a “watchdog”, keeping an eye on the students to make sure that they did what they were supposed to do;
| | She did not talk much with the students and chose not to help them with their subject-related questions because they were at the museum and the students were doing the museum’s coursework (RomanticArt);
| | She did not learn anything from the collaboration as there was none besides the visit at the museum with the students;
| | All contact between the students and the museum prior to the visit was organized by a colleague (Harold);
| | She has several ideas about how to improve the coursework, e.g. that the students’ visit at the museum was longer;
| | She did not know that Tammy was leaving her position at the museum

| Beth (G) (1x) | She thinks the RomanticArt program is too ambitious and complicated for the time allotted to doing it (90 minutes);
| | She was not familiar with the program so she referred the students to Tammy if they needed help, which meant that authority shifted from Beth to Tammy;
| | She did not get anything out of the collaboration as there was none;³
| | She said that the collaboration could be developed a lot, e.g. by producing teaching materials to be used before and after so the program itself could be integrated better in the school topic;
| | It is hard to know what THEY [the museum] expect – there is not really any communication between the museum and the school because it [the collaboration] is not formalized and because the two institutions are not used to using one another

---

¹ Harold Appendix XXX
² Since the fall of 2012, the gymnasium has collaborated with two other interface museums, Blicheregnens Museum (Museum Silkeborg) and Brigby Museum.
³ She had visited the museum with a different class earlier but did not did not mention in her response whether that visit had involved a degree of collaboration. Beth, appendix XXX
Table 9.14 Differences - schools and museums Adults Brigby

<table>
<thead>
<tr>
<th></th>
<th>Tammy (M)</th>
<th>Harold (G)</th>
<th>Heather (G)</th>
<th>Beth (G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Differences</td>
<td>Museums have authentic works and historical resources</td>
<td>The physical setting; the approach to teaching; the learning environment</td>
<td>Museum have objects; schools have books; appeal to different learning styles; level and type of physical activity; teaching goals; the measurability of learning</td>
<td>The museum activates physicality (movement and senses); motivation to learn (personal experience ↔ subject-related theory); practical dimension; expert knowledge; authentic historical resources;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Similarities</td>
<td>Time is in very short supply</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 9.15 Differences - formal and informal learning environments Adults Brigby

<table>
<thead>
<tr>
<th></th>
<th>Formal</th>
<th>Informal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tammy (M)</td>
<td>At school the students are seated most of the time listening to the teacher talk or they have group work; There are clear-cut learning objectives and exams</td>
<td>&lt;The RomanticArt program is designed coursework; There are no clear-cut learning objectives or exams in connection with the museum’s educational programs</td>
</tr>
<tr>
<td>Harold (G)</td>
<td>The school as a learning environment is regulated by the curriculum; Teaching activities are based on textbooks and programs; There are exams; The physical context (the buildings, the class rooms, the study rooms, etc.) regulates the students’ activities; The teachers work according to teaching plans and materials that are designed for the gymnasium</td>
<td>&lt;The RomanticArt program is designed coursework;</td>
</tr>
<tr>
<td>Heather (G) (1z)</td>
<td>There are lots of questions about how students should be seated in the classroom – on the tables? Leaned back against a wall? Teachers have to make sure that what they are teaching is actually learned by the students; Teachers tend to think that what they teach must be measurable and progress is made</td>
<td>&lt;The museum is a formal learning environment because there is permanent building with ordered rooms and a regular person who knows what is going to happen and who runs the show; &lt;The students actually expected that their work would be assessed (at the museum)</td>
</tr>
<tr>
<td>Beth (G) (1x)</td>
<td>The classroom and what takes place there is a formal learning environment; The environment is framed and structured; Routine;</td>
<td>There is not a regular routine; There is no assessment of performance; The students had to establish their own knowledge – they were not taught (this was a learning experience for them)</td>
</tr>
<tr>
<td>Tammy (M)</td>
<td>The purpose of the program is to get the students to think and work on their own so they can fill out the Argument Card; A few of the students might have retained facts about the artist, etc. - they are at an age where there are so many other things going on in their lives; Maybe when they get older they will think about the information presented here; Their understanding depends on how much the teachers reinforce it by returning to the historical sources, e.g. by downloading and using the material specifically provided for this purpose on the RomanticArt website; The students learned that a museum has many different resources, not just paintings; They learned that there are no right or wrong answers and to see the works of art from different angles; They learned about the artist as a way of making Romanticism and the Golden Age personal and so they can relate it to the concept of identity and perhaps relate it to themselves</td>
<td></td>
</tr>
<tr>
<td>Harold (G)</td>
<td>1st year of collaboration: Tammy visited the school and told the students about the museum, its role and function in society; The students learned about Romanticism in History and Danish at school; The students learned to combine what they learned in school with the paintings at the museum – Tammy helped them with this; The students’ learning was reinforced by subsequent mention of the museum coursework in class, e.g. in connection with a topic about industrialization in History; The student achieved a deeper understanding of Art and History by being close to and working with authentic works of art; The students appreciated that looking at the paintings brought them as close as they could get to that historical period; The students will not use the museum for school work unless their teachers encourage them to do so</td>
<td></td>
</tr>
<tr>
<td>Heather (G) (1z)</td>
<td>The students did not achieve a deeper level of understanding because they were pressed for time and they knew that they had to be back at school for a new lesson right after their visit; The students’ learning was reinforced by subsequent mention of the museum coursework in class, e.g. in connection with a topic about the Modern Era; They were better at remembering the painting of Moen’s Cliff, which they saw at the museum, than The Golden Horns, which they read about in a text;</td>
<td></td>
</tr>
<tr>
<td>Beth (G) (1x)</td>
<td>The students learned about National Romanticism at the museum by analyzing the paintings and reading the historical sources; The students saw that what they learned at school could be put to use at the museum; The students did not learn anything about learning; The students learned a lot about the artist; The students learned a lot more than the teacher did because she did not work with the</td>
<td></td>
</tr>
</tbody>
</table>

\[4\text{ Knowing what or about something; Learning facts or information; Making sense of something; Deepening understanding; How museums, libraries and archives operate; Making links and relationships between things http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/ (Accessed Jan. 22, 2104)}\]
Appendix All Tables

Table 9.17 GLO 2 Adults Brigby

<table>
<thead>
<tr>
<th>Tammy (M)</th>
<th>GLO 2 Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>The students learned:</td>
<td></td>
</tr>
<tr>
<td>- to become absorbed in a picture during the sound and light show (“aesthetic contemplation”);</td>
<td></td>
</tr>
<tr>
<td>- how to use other senses;</td>
<td></td>
</tr>
<tr>
<td>- to use the tablet PC and find their way around the program;</td>
<td></td>
</tr>
<tr>
<td>- to explore the material on the tablet;</td>
<td></td>
</tr>
<tr>
<td>- how to relate the historical sources and their Argument Cards to their painting;</td>
<td></td>
</tr>
<tr>
<td>- about reading 19th century Danish – for some this was such a daunting experience that they were “turned off” by it;</td>
<td></td>
</tr>
<tr>
<td>- about how to study historical sources;</td>
<td></td>
</tr>
<tr>
<td>- how to state their views in an argument – some of the students learned how fun it can be to debate an issue, some were daunted by the experience;</td>
<td></td>
</tr>
</tbody>
</table>

The students were given the opportunity to organize their work and results on their own, and this was conducive to their learning

<table>
<thead>
<tr>
<th>Harold (G)</th>
<th>1st year of collaboration:</th>
</tr>
</thead>
<tbody>
<tr>
<td>The students learned:</td>
<td></td>
</tr>
<tr>
<td>- that the museum is a storehouse of information that can be used in connection with school work;</td>
<td></td>
</tr>
<tr>
<td>- to work with an organization outside school, e.g. making appointments and having meetings with people from the museum;</td>
<td></td>
</tr>
<tr>
<td>- to be considerate of other people’s time, e.g. by being well-prepared for their meetings at the museum;</td>
<td></td>
</tr>
<tr>
<td>- to spend their time at the museum well, e.g. planning their museum-related questions beforehand;</td>
<td></td>
</tr>
<tr>
<td>- that they could use the museum for their Danish-History assignment even if they were not interested in the art on display</td>
<td></td>
</tr>
</tbody>
</table>

Some of the students who did not normally do their share of the work were enlivened – especially academically weak boys who were good at technical things and computers, and who in some cases actually took the lead in their groups;

In the groups, the students were gathered close together around the screen on their tablet which seemed to encourage all of them to participate in the work;

Some of the students were frustrated because they did not have time to do the assignment properly;

It was good for both students and Heather to experience each other in a learning different context;

The students spent too much time learning how to use the tablet PC and too little time working with the subject-related content of the program

<table>
<thead>
<tr>
<th>Heather (G) (1z)</th>
<th>The students learned:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- to find their way around the tablet PC and to combine its information with the information on the accompanying materials;</td>
<td></td>
</tr>
<tr>
<td>- to work independently (Heather could not help them)</td>
<td></td>
</tr>
<tr>
<td>- to become absorbed in a painting (during the sound and light show);</td>
<td></td>
</tr>
</tbody>
</table>

Some of the students who did not normally do their share of the work were enlivened – especially academically weak boys who were good at technical things and computers, and who in some cases actually took the lead in their groups;

In the groups, the students were gathered close together around the screen on their tablet which seemed to encourage all of them to participate in the work;

Some of the students were frustrated because they did not have time to do the assignment properly;

It was good for both students and Heather to experience each other in a learning different context;

The students spent too much time learning how to use the tablet PC and too little time working with the subject-related content of the program

<table>
<thead>
<tr>
<th>Beth (G)</th>
<th>It was good for both the students and Beth to experience each other in a different learning context, which provided a new framework for how they communicate;</th>
</tr>
</thead>
<tbody>
<tr>
<td>The physical context was different from school - the students moved around a lot, sat on</td>
<td></td>
</tr>
</tbody>
</table>

5 Knowing how to do something; Being able to do new things; Intellectual skills; Information management skills; Social skills; Communication skills; Physical skills

the floor and, steered by their curiosity, explored the exhibit – it was kind of like a treasure hunt;
The students in the groups (2-3 students per group) were forced to collaborate because they were in close physical proximity (gathered around the small screen of the tablet PC);
As normally happens, the good students took the lead;
The students in the groups were very collaborative and drew on each other’s more actively than normal because they had to agree and make their own decisions about many things, which does not normally happen in the classroom when the teacher is lecturing;
The students got practice in:
- combining knowledge from different sources;
- quickly acquainting themselves with the available material and deciding what to use;
- debating;
- working with classmates they would not normally work with;
- how to behave in a new learning environment outside school;
Some of the students were frustrated by how difficult the program was to navigate, which hindered their learning experience

Table 9.18 GLO 3 Adults Brigby

<table>
<thead>
<tr>
<th>Tammy (M)</th>
<th>GLO 3 Attitude and values⁶</th>
</tr>
</thead>
<tbody>
<tr>
<td>The students’ view of the museum was not fundamentally changed;</td>
<td></td>
</tr>
<tr>
<td>The students might not think it was fun to visit the museum because it was part of their course of study at school;</td>
<td></td>
</tr>
<tr>
<td>There are so many other things on a young people’s minds that visiting a museum is not considered very important but doing so with their teacher at least gives them a learning experience they would not otherwise have gotten</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Harold (G)</th>
<th>1st year of collaboration:</th>
</tr>
</thead>
<tbody>
<tr>
<td>The students’ attitude towards the topic (National Romanticism) and the museum was changed by doing the coursework;</td>
<td></td>
</tr>
<tr>
<td>The students were very responsible and goal-oriented at the museum – they had a concrete job to do there and wanted to get something out of their visit;</td>
<td></td>
</tr>
<tr>
<td>The students discovered that they could combine their subject-related knowledge from school with what the learned at the museum;</td>
<td></td>
</tr>
<tr>
<td>The students were respectful and slightly awed by being close to the original paintings;</td>
<td></td>
</tr>
<tr>
<td>The students will probably not start visiting the museum as a leisure time activity</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Heather (G) (1z)</th>
<th>The tablet PCs contributed to the students’ motivation;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not being assessed for their work was motivating for the students;</td>
<td></td>
</tr>
<tr>
<td>They learned something new about the museum by meeting an expert (Tammy) and by discovering that it used modern technology (tablet PCs);</td>
<td></td>
</tr>
<tr>
<td>Even though the students were working in unfamiliar surroundings, they felt secure in that they did not have to perform to a standard – this motivated their learning;</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Beth (G) (1x)</th>
<th>Right after their visit to the museum, several of the students considered choosing National Romanticism as the topic for their Danish-History paper;</th>
</tr>
</thead>
<tbody>
<tr>
<td>It was a motivating experience for the students not to feel anxious about having to perform to a standard at the museum, there were not the same assessment elements as there are in a normal lesson at school;</td>
<td></td>
</tr>
<tr>
<td>The sound and light show provided them with a personal experience of the painting and this personal experience was given special status as being the point of departure (instead</td>
<td></td>
</tr>
</tbody>
</table>

⁶ Feelings; Perceptions; Opinions about ourselves (e.g. self esteem); Opinions or attitudes towards other people; Increased capacity for tolerance; Empathy; Increased motivation; Attitudes towards an organization; Positive and negative attitudes in relation to an experience

of textbook theory) for the rest of their learning – this was very motivating;
Many students are motivated by being able to relate an experience to their own lives, and
the sound and light show helped them do that;
The students learned about an institution outside school and about how to use it and this
was very motivating for them;
The students experienced the museum from a new perspective, e.g. the museum activated
them and used modern technology to do so

Table 9.19 GLO 4 Adults Brigby

| Tammy (M) | The students moved around in the exhibition and experienced the paintings first hand and
close up and through the sound and light show – these things provided them with different
approaches to the art;
They might not have enjoyed their visit to the museum because it was part of their school
work;
The students were surprised by the sound and light show, by different elements in the
program on the tablet PC and by the debate at the end;
The students obviously enjoyed themselves – their teacher said that they livelier here than
in class;
They explored the exhibit to see the other paintings |
| --- | --- |
| Harold (G) | The students told Heather that the sound and light show was very impressive and that it
created a solemn, almost reverent atmosphere;
They thought it was fun because they were not being assessed;
They were clearly absorbed in their work at the museum because they kept busy the whole
time;
Before they arrived at the museum, they had a very unclear idea about it so they were
surprised in a positive way by their experience;
They were pleasantly surprised that the museum offered exciting, very modern activities
and that there was an expert there to help them and answer their questions;
The students explored the exhibit, and using their bodies once in a while was good for
their learning, keeping them from losing their concentration;
They felt comfortable there – it was cozy and warm |
| Heather (G) (1z) | The visit inspired several of the students to consider using National Romanticism as the
topic of their Danish-History paper;
They seemed to enjoy themselves, they were freer and more spontaneous;
The groups that had trouble figuring out how to use the program were frustrated |
| Beth (G) (1x) | According to their teacher (Heather), the students behaved differently at the museum that
they did at school: They were livelier and very absorbed by the program |

Table 9.20 GLO 5 Adults Brigby

| Table 9.20 | GLO 5 Activity, behavior and progression
| --- | --- |
| Tammy (M) | Having fun; Being surprised; Innovative thoughts; Creativity; Exploration, experimentation and making;
What people do; What people intend to do; What people have done; Reported or observed actions; A
Harold (G) 1st year of collaboration:
The students acted very responsibly at the museum;
They were very inquisitive and asked Tammy and the teachers many questions while they were at the museum;
They will probably not visit the museum in their leisure time;
If the teachers keep reminding them about the museum as a knowledge resource, the students might be inclined to use it in connection with school work

Heather (G) (1z)
At first the students were a bit subdued because they were in a new place;
The students were more responsible in their group work at the museum than they would be at school;
Some normally not very active students took on more responsibility in the group work at the museum than they would at school

Beth (G) (1x)
Right after they visited the museum, there were several who considered writing about National Romanticism;
A few weeks after their visit, only one student stayed with that plan – the teacher had not had the class in the interim and they had changed their minds;
They behaved more formally and were more polite at the museum, also shy and subdued;
Their shyness was a problem during the debate because it was difficult to get them to enter into a dialogue;
Amongst themselves and towards their teacher, the students were more informal at the museum than at school, but they were more formal towards Tammy because they did not know her;
They were active and had to take responsibility for their own learning and that was a learning experience in itself

<table>
<thead>
<tr>
<th>Table 9.21 Learning about the students Adults Brigby</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning about the students</td>
</tr>
<tr>
<td>Tammy (M)</td>
</tr>
<tr>
<td>Harold (G)</td>
</tr>
<tr>
<td>Heather (G) (1z)</td>
</tr>
</tbody>
</table>
They acted differently at the museum because there were no right or wrong answers; They were freer and more spontaneous, laughing and teasing each other; They acted more informally towards Beth because she was not the teacher nor the authority at the museum and she and they communicated more as peers; They were very shy and formal with Tammy, especially so during the debate when they were in front of their classmates and interacting with an expert, whom they do not know very well – this made it hard for her to have a subject-related dialogue with them; Some students benefit greatly from visiting a museum where their senses are stimulated, e.g. the sound and light show, which is something that cannot be replicated in the classroom; The sound and light show sparked things off in their heads which would not have been sparked off otherwise; For weaker students it is especially relevant to use museums as a learning resource as they are more practically oriented; The program was too hard for them; They had to establish their own knowledge so that was a learning experience but they were pushed for time; They acted as they normally did though the level of involvement was higher than normal.

### Table 9.22 Adult’s learning – Beth

<table>
<thead>
<tr>
<th>Learning:</th>
<th>Beth (G) 2nd year of collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>About oneself</strong></td>
<td></td>
</tr>
<tr>
<td><strong>About and changing one’s practice</strong></td>
<td>At the museum the relationship between Beth and her students was less formal (Beth relinquished her authority to the museum), which made it possible for them to talk about word class in a way that would not have been possible in class; By using the museum, she established a new practice in her Danish lesson; If it had been a less well-mannered class, Beth would have talked with them about how to behave when they were at the museum; Beth felt it was a learning experience to see how the students behaved at the museum and this was what made her want to integrate it more in her lessons;</td>
</tr>
<tr>
<td><strong>About one’s colleagues</strong></td>
<td>Her colleagues (Harold and Dorothy) contributed to the RomanticArt program, ensuring its usefulness as supplementary material for Danish lessons</td>
</tr>
<tr>
<td><strong>About one’s partner institution</strong></td>
<td>This was the first time Beth had experienced an educational program at a museum that was based on the students being active and creating their own learning</td>
</tr>
<tr>
<td><strong>From one’s partner institution</strong></td>
<td>Beth learned new things about the artist and the Golden Age in Art; Beth realized that she had learned less than the students at the museum because she had not worked with the tablet PC; She also got new ideas about how to plan and organize her lessons; She was inspired by the sound and light show at the museum because it awakened the students’ senses and “started off a process in their heads”</td>
</tr>
</tbody>
</table>

9 There was an exhibit at the museum called LOVE about i.a. language and words, see the virtual tour [http://www.youtube.com/watch?v=9j2TOrIqclQ](http://www.youtube.com/watch?v=9j2TOrIqclQ) (Accessed Jan. 25, 2014)
Table 9.23 Adult’s learning – Harold

<table>
<thead>
<tr>
<th>Learning:</th>
<th>Harold (G) - 1st year of collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>About oneself</td>
<td>Collaboration means that the museum is involved in planning lessons and materials for the students, a process which is normally organized 100% by the teachers; The interface concept has changed the way the school uses museums – earlier teachers would just book a guided tour and now the school contributes to targeting the museum’s educational offerings to the curriculum and syllabus of a given class or year; The collaboration has been formalized, meaning that there is permanently an open door between the museum and the school - Harold has been made interface liaison officer; The school’s management is very supportive of the interface concept and the school’s partnerships with museums; The 3rd year of interface collaboration with the museum is different – Using the RomanticArt program is more like taking a textbook off the shelf and using it for teaching – one cannot relate to the project in the same way when one has not participated in developing it;</td>
</tr>
<tr>
<td>About one’s colleagues</td>
<td></td>
</tr>
<tr>
<td>About partner institution</td>
<td></td>
</tr>
<tr>
<td>From partner institution</td>
<td>Learned about how the museum documents an historical era</td>
</tr>
</tbody>
</table>

Table 9.24 Adult’s learning – Heather

<table>
<thead>
<tr>
<th>Learning:</th>
<th>Heather (G) – 2nd year of collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>About oneself</td>
<td>The visual dimension of the Danish curriculum, exemplified by picture analysis and media products, will never be its main focus – the main focus is always on the written word; She would like to have had more time to prepare the students better for the program at the museum so they were more sure of themselves regarding the topic National Romanticism; While she and the students were at the museum, Heather downplayed her authority and her behavior was quieter and more subdued than at school; Heather learned that it is a very good idea to supplement classroom lessons with occasional excursions to the museum, e.g. the museum visit made it easier to refer back to the Romantic Period in Danish lessons because the students clearly remembered the paintings at the museum; It was good for the students and for Heather to experience each other in a new learning context</td>
</tr>
<tr>
<td>About one’s colleagues</td>
<td>Many of her Danish colleagues at school were curious to know more about the museum and the coursework</td>
</tr>
<tr>
<td>About partner institution</td>
<td></td>
</tr>
<tr>
<td>From partner institution</td>
<td></td>
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</tbody>
</table>
Appendix All Tables

| About one's partner institution | It would be a good idea for the museum to offer teaching materials and activities online; Tammy’s communication with the students was cheerful, open and direct and although she did not assess the students’ performance, she was in charge of and supported their learning activity and the debate at the end. |
| From one’s partner institution | The Danish curriculum includes a media course of study in which online teaching materials or activities from the museum would be very relevant to use. |

Table 9.25 Adult’ learning – Tammy

<table>
<thead>
<tr>
<th>Learning:</th>
<th>Tammy (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>About oneself</td>
<td>1st year of collaboration (with Harold et al): Visiting the school worked well, it would be a good idea to organize that more often and that would mean a greater exchange of knowledge; Long-term planning is necessary to organize meetings and establish the collaboration as a permanent part of one’s daily routine so focus on the partnership is maintained; The museum benefits greatly when other professionals are involved in the planning and development of educational programs; 3rd year of collaboration (with Beth and Heather): The technical introduction of the tablet PC takes much too long and the students become unfocused; Even after the introduction of the tablet, the students have trouble with it;</td>
</tr>
<tr>
<td>About one’s colleagues</td>
<td>1st year of collaboration (with Harold et al): Learned about lesson plans and syllabus for 1st-year Danish and History at the gymnasium and thus contribute to the teachers’ lessons;</td>
</tr>
<tr>
<td></td>
<td>2nd year of collaboration (with Beth and Heather):</td>
</tr>
<tr>
<td>From one’s partner institution</td>
<td>1st year of collaboration (with Harold et al): Tammy learned a lot about pedagogy and didactics for this level of students, e.g. about how to design the program so that they learned from it; Tammy learned about what the teachers needed; Tammy learned how to work with students of that age (15-16 years old); She learned from the students, whose feedback was very useful.</td>
</tr>
</tbody>
</table>

Table 9.26 Motivation for participation Adults Brigby

<table>
<thead>
<tr>
<th>Motivation for participation and enjoying oneself</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tammy (M)</td>
<td>Grateful for and very pleased with the collaboration with the teachers (Harold and Dorothy); Very confident that collaboration about museum-based teaching material is a win-win situation.</td>
</tr>
<tr>
<td>Harold (G)</td>
<td>He thought it was exciting and a really good opportunity to work with the museum. He even felt a little honored that Brigby Art Museum would collaborate with them. [Collaborating with the museum] gave the teachers something, a dimension they hadn’t</td>
</tr>
</tbody>
</table>

10The museum already offered teaching material online.
tried before, and he and his colleagues felt that this was something they wanted to try. It was just great; It was exciting to test some of these things, to translate a museum through educational programs on APPs and iPads... make the museum accessible, build some platforms and so forth

| **Heather (G)** |
| **Beth (G)** |

### Table 9.27 SWOT Brigby – Beth

| **Beth (G) Brigby** |
| **Strengths** |
| Visiting the museum is appealing for students who do better in less academic subjects because they can see things and touch things and become involved in a personal way; The most important strength is that using the museum makes it possible to insert a practical element in the lessons; The museum has expert knowledge of the topic (National Romanticism); The museum has materials at its disposal which the teachers do not normally have access to; The teacher learns from the process: Information about the topic and idea about how to set up his or her lessons |

| **Weaknesses** |
| The RomanticArt program is too ambitious and complicated, and not enough time has been set aside for the students to do it; There is no formalized communication channel between the museum and the school – this makes it hard to know what the museum expects and hard for them to know what the teacher expects because the two institutions are not used to working together |

| **Opportunities** |
| Making sure that a teacher from the school functions as a consultant for the program; Using museums much more in conjunction with lessons Formalization of the collaboration, i.a. involving teachers as advisors and consultants when the museum’s educational programs are targeted gymnasium students |

| **Threats** |
| If the collaboration becomes too time-consuming and bothersome; If the collaboration is not formalized |

### Table 9.28 SWOT Brigby – Harold

| **Harold (G) Brigby** |
| **Strengths** |
| 1st year of collaboration: Both partners were enthusiastic and focused on opportunities, not limitations In general: 100 % support and encouragement from management, including allocation of funds; The school’s involvement in intrface / collaboration with museums is used as part of the school’s marketing strategy at e.g. Open House |

| **Weaknesses** |
| The museum can only handle two collaborations per year which means the teachers cannot use the developed program or develop new coursework spontaneously |

| **Opportunities** |
| Creating a positive upward spiral for both institutions: young people who get a good experience at the museum might invite their families in to see it → more positive word of mouth mention and publicity; Commercial profit for the museum; The school is seen as more than just a school but also as an institution that is active in the community |

| **Threats** |
| On the one hand, coming to a standstill in the partnership by not renewing and developing new material, and on the other hand, thinking that the collaboration is too...
time-consuming and complicated to fit into a busy timetable: in both cases, the partnership will die

### Table 9.29 SWOT Brigby – Heather

| Strengths | The museum does not assess the students’ performance, and encourages the students to take responsibility for their own learning; The museum’s approach to teaching and learning is a good supplement to the school’s approach, i.a. because the students experience a learning environment outside the school, which a person who is not a teacher is in charge of; When the students have prior knowledge of the topic, their learning experience at the museum is enhanced; The students’ prior knowledge is activated in a new learning environment (the museum); The school has a wide variety of students and study programs; There are Art, History and Danish teachers at the school, meaning they have knowledge about the museum’s remit – there is a mutual frame of reference; The school’s timetables are very flexible and if notice is given in advance, lessons can be moved around so it is possible for the class to spend time at the museum or other places |
| Weaknesses | The RomanticArt program is too ambitious and complicated, and not enough time has been set aside for the students to do it; The methods of education and learning objectives are different, so there is the risk that the students do not learn enough |
| Opportunities | Exploiting the fact that the institutions and their methods of education are different → potential positive synergy |
| Threats | If the teachers the museum’s educational programs do not support the students’ learning; If the students themselves find the experience more confusing than educational |

### Table 9.30 SWOT Brigby – Tammy

| Strengths | Good discussions about content and didactics; Visiting the students on their home ground (at the school) to tell them about the museum; |
| Weaknesses | Everyone is busy and it is difficult to coordinate people’s timetables |
| Opportunities | To turn the partnership’s collaboration into a tradition |
| Threats | Teachers who are not as open and geared to collaboration as Harold and Dorothy were |
## Hammersby Gymnasium and Hammersby Museum

### Table 10.1 GLO 1 1s Haley, Felix, Morgan

<table>
<thead>
<tr>
<th>Content</th>
<th>Haley</th>
<th>Felix</th>
<th>Morgan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Understanding connections between activities</strong></td>
<td>She understood the connection between visiting the ring fortress and getting a feel of its size and doing calculations in math about how to measure it</td>
<td>He understood that the archery activity was to get the students to understand what things were like back then (&quot;primitive&quot;)</td>
<td>The archery activity was an add-on activity that did not teach them much about how the Vikings made war – they learned a little bit about what ships the Vikings used, but the main focus of the topic was who had built the ring fortresses; He understood the connection between visiting the ring fortress and getting a feel of its size and doing calculations in math about how to measure it</td>
</tr>
<tr>
<td><strong>Subject-related learning and relevancy</strong></td>
<td>At the museum the students learned how to see their topic from several angles (different theories)</td>
<td>The best part was learning how to be critical of historical sources; They learned that historical knowledge is open to interpretation; They learned how to make their own theories about who had built the ring fortresses on the basis of their observations while they were visiting them</td>
<td>The best part was studying the topic in depth; The students learned how: - to see the topic from different angles - to develop their own theories on the basis of the historical sources - to be critical of the historical sources - to analyze and discuss their own theories History is comprised of interpretations e.g. of the links between finding arrowheads, hypothesizing about a debate or attack at that spot, finding other historical sources to confirm or disprove the theory, checking the topography of the countryside at that time, etc</td>
</tr>
<tr>
<td><strong>Learning about the museum</strong></td>
<td>The students learned about: - Different written historical sources - How the museum can be used to find information - How learning from an</td>
<td>The students learned about: - archaeologists at the museum - how to use the museum, e.g. shooting with a bow - historical sources and how they are used to create knowledge The students got to</td>
<td>The students learned: - That the museum had much more to offer than knowledge about skeletons and mummies - That the museum knew about the topography of the countryside in the Viking Era, where fortresses had been located, etc. - How the museum</td>
</tr>
</tbody>
</table>
Appendix All Tables

<table>
<thead>
<tr>
<th>Understanding about learning</th>
<th>expert at the museum is different than reading a theory in a book from the library</th>
<th>know Brad, a few archaeologists and other museum people; The students were allowed behind the scenes at the museum</th>
<th>processes, prepares and interprets historical sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>The best part was being put in a situation where they had to think for themselves and interpret the historical sources; Drawing and coloring the “pies” on the Wheel of Fortune (which were illustrations of different historical sources) made it easier for her to remember them</td>
<td>Experiencing things in reality is good for students who do not like to read or are not good at it; The students were better at remembering the math in the coursework because they had been at the ring fortress and walked around to measure it</td>
<td>Listening to and learning from experts that have different perspectives regarding the topic that the students otherwise would read about in a history book and thus only get one angle on it</td>
<td></td>
</tr>
<tr>
<td>Knowing what or about something</td>
<td>The students learned how one object can be interpreted in many ways (e.g. a coin)</td>
<td>The students learned about the connection between theories and research into finds and historical sources</td>
<td>The students learned how to use historical sources to argue pro and con about who built the ring fortresses</td>
</tr>
<tr>
<td>Learning facts and information</td>
<td>The students learned about: - archaeology (dating, excavations, etc.) - the topography of the countryside in the Viking era, where the rivers were in relation to the fortress, etc.</td>
<td>The students learned about: - archaeology (dating, excavations, etc.) - Viking weaponry and defense - Viking architecture (ring fortresses)</td>
<td>The students learned about: - How the fortresses were built - How much of a challenge life was in the Viking Era</td>
</tr>
<tr>
<td>Making sense of something</td>
<td>It was good to visit and work with the ring fortresses after reading about them; Visiting the museum helped the students develop their own theories</td>
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</tbody>
</table>

25
### Table 10.2 GLO 2 1s Haley, Felix, Morgan

<table>
<thead>
<tr>
<th>Content</th>
<th>Haley</th>
<th>Felix</th>
<th>Morgan</th>
</tr>
</thead>
</table>
| **Communication skills** | **In her group she learned to talk with a classmate she would not normally talk with:**
|                          | **In his group he learned to talk with a classmate he would not normally talk with:**
|                          | **He got a lot of practice talking with the experts from the museum – they were the experts, not the teachers**            |                                                                                         |                                                                                            |
| **Social skills**        | **From working in the group, she became more familiar with classmates she did not normally talk with:**
|                          | **They learned from each other in their groups because of their differences:**                                             | **They discovered new talents about some of the classmates in their groups and learned how to exploit each other’s strengths (the groups were organized by their teacher according to skills (e.g. one person with math skills, one person with creative skills, etc.) and who were good friends in class):**
|                          | **He heard classmates become vocal who would not normally be active:**                                                    | **He noticed that some of the students discovered new things about themselves and about each other:** |                                                                                            |
| **Intellectual skills**  | **At the museum the students learned how to see their topic from several angles (different theories):**                    | **They learned how to make their own theories about who had built the ring fortresses on the basis of their observations while they were visiting them:** | **Learning how to use different resources to support their theories**                         |
| **Being able to do new things** | **His group learned to use an iPad to shoot and edit a film about the project / coursework – editing it helped them remember what they had learned and use it in their work to produce a theory** | **Doing archery, which is a kind of practical learning**                                                                 |                                                                                            |
| **Information management skills** |                                                                                                                        |                                                                                         | **The students learned to use different types of resources to support their theories**     |
| **Physical skills**      |                                                                                                                      |                                                                                         | **Doing archery**                                                                          |
| **attitudes in relation to an experience** | to know some classmates better in a different setting than at school); It was good to have experts to tell them about what they saw at the museum | Viking fortress 1000 years ago, but he did | the last day was really motivating – the students threw themselves into the debate whole-heartedly and were very enthusiastic because they had spent a long time producing their own theories; |
| **Opinions or attitudes towards other people** | Their group work was a very positive experience (she got to know some classmates better in a different setting than at school) | He found out that museum professionals are not necessarily boring and that they are dedicated to their work and happy to be of help and that if he came to them in the future with inquiries, they would probably help him | The museum professionals are happy to share their knowledge and expertise |
| **Motivation** | The break in the routine made it motivating; The fact that they saw something real and concrete made it motivating; It would not be as exciting if they did this type of thing every week | It was motivating to develop their own theory and they even got a little annoyed with the archaeologists and their theories | He was motivated by being given the opportunity to study a topic in depth and be active (e.g. producing their own theories and finding arguments to support them); Debating the archaeologist’s theory on the last day was really motivating – the students threw themselves into the debate whole-heartedly and were very enthusiastic because they had spent a long time producing their own theories; When one is very motivated, one remembers better |
| **Perceptions** | The museum professionals were very committed and very, very knowledgeable about the objects at the museum | He had thought archaeology must be very boring until he met the archaeologists, who were interesting and friendly and he learned a lot about their work methods; He thought it was interesting to visit the ring fortresses and learn about their history from experts, but he would probably have learned just as much from reading about it all; This coursework was proof that their school was not boring | He admitted that his prejudices about archaeology were changed by this coursework – he learned about its use and methods |
| **Attitude towards an organization (e.g. the museum)** | She liked being at museums but once she visited a museum, she would not be likely to re-visit it unless she could use it for something; Not a lot happens at a historical museum whereas at a big art museum, they make new exhibits all the time | It was interesting for the students to get to know the people who work at the museum and see the museum behind the exhibits; He would not visit the museum in his spare time because it is small and he had already seen all of it | He had not been excited about visiting the museum the first time but the second time he could see that it could be used constructively in their project; Visiting the museum when one has a purpose for doing so makes it interesting; |
He would definitely use the museum again if he had a purpose for doing so, e.g. for school – he would not have thought to do this before this coursework; He would probably not visit it in his spare time.

### Table 10.4 GLO 4 1s Haley, Felix, Morgan

<table>
<thead>
<tr>
<th>Content</th>
<th>Haley</th>
<th>Felix</th>
<th>Morgan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Having fun</strong></td>
<td>It was cozy and exciting to do something out of the ordinary – if they did it every other week it would not be as fun</td>
<td>It was fun to do archery; A break in the routine a couple of times a year is fun – if it was oftener, it might be too much</td>
<td>It was fun to do archery and it got the students interested in the topic; The coursework created a variation in the normal lessons, which was good</td>
</tr>
<tr>
<td><strong>Being surprised</strong></td>
<td></td>
<td>He was surprised by how much the film helped them remember what they had experienced</td>
<td></td>
</tr>
<tr>
<td><strong>Creativity</strong></td>
<td>It was really good to do practical and artistic work – it helped her remember the many historical sources; Making the pies for the Wheel of Fortune helped her remember the ones she had just drawn and colored</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Exploration, experimentation and making</strong></td>
<td>It was really good to do practical and artistic work – it helped her remember the many historical sources</td>
<td>It was exciting to figure out how to use the iPad to make and edit the film</td>
<td></td>
</tr>
<tr>
<td><strong>Being inspired</strong></td>
<td>It was good that the experts with were with them at the museum – people who really, really knew what they were talking about; She was happy that they visited the fortresses because actually seeing them was different than doing the mathematical calculations to find out how big they were</td>
<td>Forming their own theories and then debating them with the archaeologists was very stimulating</td>
<td></td>
</tr>
</tbody>
</table>

### Table 10.5 GLO 5 1s Haley, Felix, Morgan

<table>
<thead>
<tr>
<th>Content</th>
<th>Haley</th>
<th>Felix</th>
<th>Morgan</th>
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<tr>
<td></td>
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</table>
### What people intend to do

<table>
<thead>
<tr>
<th>Action</th>
<th>Haley</th>
<th>Felix</th>
<th>Morgan</th>
</tr>
</thead>
<tbody>
<tr>
<td>She liked being at museums but once she had been there, she probably would not go back again, unless she could use if for something</td>
<td>He would definitely use the museum in the future if it was relevant for his school work and felt confident that they would help him; He would not visit the museum in his spare time</td>
<td>He would definitely use the museum in the future if it was relevant for his school work (he would not have thought to do so before this coursework); He would not visit the museum in his spare time, maybe ARoS</td>
<td></td>
</tr>
</tbody>
</table>

### Actions (reported or observed)

<table>
<thead>
<tr>
<th>Action</th>
<th>Haley</th>
<th>Felix</th>
<th>Morgan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classmates discovered new things about each other during this coursework</td>
<td>The way the groups were organized was good because the students learned about their own and each other’s strengths and about how best to exploit them in the situation, e.g. discovering and using a classmate’s creative abilities</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Change in behavior

<table>
<thead>
<tr>
<th>Action</th>
<th>Haley</th>
<th>Felix</th>
<th>Morgan</th>
</tr>
</thead>
<tbody>
<tr>
<td>The way the groups were organized was good because the students learned about their own and each other’s strengths and about how best to exploit them in the situation, e.g. discovering and using a classmate’s creative abilities</td>
<td>He learned that there were various lectures at the museum and thought he might go to hear one if the topic was interesting, e.g. about ring fortresses</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Progression, e.g. towards further learning

<table>
<thead>
<tr>
<th>Action</th>
<th>Haley</th>
<th>Felix</th>
<th>Morgan</th>
</tr>
</thead>
<tbody>
<tr>
<td>He learned that there were various lectures at the museum and thought he might go to hear one if the topic was interesting, e.g. about ring fortresses</td>
<td>He felt that it would make no difference for him whether he read about the Viking Era in a book or went to see one; The school contributed most to his learning in this coursework; The teachers helped them process what they learned at the museum; The teachers had more subject-related knowledge; There is a lot of subject-related information that students need to learn –</td>
<td></td>
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</tr>
</tbody>
</table>

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**Table 10.6 Learning School cmp. to museum 1s Haley, Felix, Morgan**

<table>
<thead>
<tr>
<th>School learning</th>
<th>Haley</th>
<th>Felix</th>
<th>Morgan</th>
</tr>
</thead>
<tbody>
<tr>
<td>The students learned about and discussed historical sources and learned about being critical; Books in a library or information on the internet has already been interpreted by someone; They did mathematical calculations about the size of the fortresses</td>
<td>History books are not necessarily true; History books do not necessarily tell the whole story; The teachers are open and willing to joke around with the students; The teachers had more subject-related knowledge that the students could ask about; The collaboration with the museum proved the school was not so boring as people sometimes think</td>
<td>He felt that it would make no difference for him whether he read about the Viking Era in a book or went to see one; The school contributed most to his learning in this coursework; The teachers helped them process what they learned at the museum; The teachers had more subject-related knowledge; There is a lot of subject-related information that students need to learn –</td>
<td></td>
</tr>
</tbody>
</table>

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11 ARoS is a very big art museum in Aarhus, the second largest city in Denmark, situated on the east coast of the mainland
in school – but coursework like this is okay once in a while

| Museum learning | Was about objects and where they were found and where the houses were found; They learned about archaeological methods; At the museum, the experts interpret things themselves; They got a visual impression of the size of the fortresses; They learned about the topography of the land in the Viking Era, about rivers and how the ships could sail right up to the fortresses – when they visited the fortress, they saw that the countryside was completely different | The students tried doing archery as a way of becoming interested in the topic; The students learned how to use the museum in a different way than they had tried before (e.g. doing archery); By doing archery, the students got a better understanding of how primitive the Viking age was and how it was to build things back then; The museum gave them a lot of learning through their teacher, e.g. archaeologists’ theories, sources and finds, which the teacher used in class; The museum made learning more tangible (e.g. seeing the fortresses) – it might be easier to remember math because the students measured the fortresses while they were there; It was no different talking to the museum professionals than it was talking to the teachers; The museum professionals knew more about objects and excavations, etc. – they had expert knowledge; Getting a visual impression of the size of the fortress had a greater effect on classmates who had trouble reading | Practical learning (e.g. archery); Visiting the ring fortress gave him a visual impression of its size instead of just reading that it was 130 meters long; Being at the fortress and measuring it was a different way to learn about it; The museum professionals had a different approach to teaching – they showed the students objects from the past; The archaeologists and historians interpret what the find – it is like putting the pieces of a puzzle together; There is not just a person who has read a history book but people who have been out digging and think along different lines than what is in history books |

<table>
<thead>
<tr>
<th>Table 10.7 GLO 1 2t Robert, Cissy, Steve, Mimi</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content</strong></td>
</tr>
<tr>
<td><strong>Understanding connections between activities</strong></td>
</tr>
<tr>
<td>Subject-related learning and relevancy</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>The students learned how to be critical of historical sources</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learning about the museum</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The museum tied it all together; The archives and objects were the point of departure of the students’ work; The people at the museum were experts, e.g. Brad, who knew so much about the town even though he did not come from there - it is useful to know experts like him</td>
<td>Learning about sources in history lessons can be hard to remember – at the museum, the sources are right there, and one can associate it with oneself; The museum would be more interesting if it e.g. worked with themes and made new exhibits that were related to the present day</td>
<td>The museum collects history and puts it in the archives; The museum preserves history and teaches people about it so it is very important; History books present knowledge that has been interpreted many times by many people; that is not the case at the museum</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Understanding about learning</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>It was really good that there was someone from the museum to guide the students when they were studying archival material and objects and</td>
<td>If someone from the museum taught the students history at school, it would probably be very factual because they do not know much about pedagogy; This coursework made it possible to take responsibility for</td>
<td>The lectures and talks were the most interesting because the students heard about things they would not be able to find on the internet; The coursework made it possible</td>
<td>The abstract method the students learned in the coursework’s subjects at school became concrete and comprehensible at the museum;</td>
</tr>
</tbody>
</table>
to give them feedback on their presentations; The most important thing the students learned was how to be critical of historical sources, and using the museum in this context was really exciting. The most important thing the students learned was how to be critical of historical sources, and using the museum in this context was really exciting. The students felt that their individual answers were important and there was just one answer and that they did not just have to present what someone else had said earlier. for the students to decide for themselves how to get and organize information.

### Knowing what or about something

| Knowing what or about something | The museum connected what the students learned about the present to the past and vice versa; He learned about his own town | The students learned the importance of being critical about historical sources; At the museum, the students learned about how knowledge is created | The people who gave the lectures and talks tied the coursework together because they were enthusiasts and knew a lot about the town | For her the coursework was very interesting because she lived in the town |

### Learning facts and information

| Learning facts and information | He learned about how important the railway had been for the development of the town | Brad visited the class at school and cleared up misunderstandings and gave them new information about the buildings they had worked with in town | He learned about how important the railway had been for the development of the town; His group discovered how many people commuted back and forth to the town by counting cars; | She learned about the town from different people, e.g. a former mayor, an historian, etc. |

### Table 10.8 GLO 2 2t Robert, Cissy, Steve, Mimi

<table>
<thead>
<tr>
<th>Content</th>
<th>Robert</th>
<th>Cissy</th>
<th>Steve</th>
<th>Mimi</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Communication skills</strong></td>
<td>The students’ presentations were targeted an authentic audience (not just fellow students and teachers); The students learned about what language to use and how to frame their</td>
<td>The students learned about interviewing people; The students’ presentations were targeted an authentic audience (not just fellow students and teachers)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

32
Appendix All Tables

<table>
<thead>
<tr>
<th>Social skills</th>
<th>She understood that hands-on activities (like making maps) were good for students who found it hard to read about history, etc.</th>
</tr>
</thead>
</table>
| **Being able to do new things** | The students learned:  
- How to draw maps and about how the town is laid out  
- About Google Earth and how to mark sites, etc.  
- How to be critical of historical sources | The students learned:  
- How to be critical of the photos at the archives  
- About interviewing people | The students learned:  
- How to collect and work with empirical data;  
- About the function and work of the archives | She learned about how to be critical of historical sources because they worked with real sources at the archives and not just with theoretical concepts |
| **Information management skills** | The students learned how to search the database at the archives; Using the archives was very helpful to find information about their topics | The students learned:  
- How to search the database at the archives  
- How to find and work with statistics | The students learned how to link different sources together to create meaning | |

**Table 10.9 GLO 3 2t Robert, Cissy, Steve, Mimi**

<table>
<thead>
<tr>
<th>Content</th>
<th>Robert</th>
<th>Cissy</th>
<th>Steve</th>
<th>Mimi</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Positive and negative attitudes in relation to an experience</strong></td>
<td>It was good that the students were allowed to be creative and articulate their own visions for the future of their town; It was good that they were given free rein to work out their vision; It was good that their presentations were targeted an authentic audience</td>
<td>It was good that the students were allowed to be creative and articulate their own visions for the future of their town; It was good that they were given free rein to work out their vision; It was good that their presentations were targeted an authentic audience</td>
<td>It was good that the students were given the opportunity to think creatively</td>
<td></td>
</tr>
<tr>
<td><strong>Motivation</strong></td>
<td>It was motivating that the students were put in charge of their</td>
<td>It was more exciting to work this way and to prepare an oral presentation for an</td>
<td>It was motivating to work like</td>
<td>It was motivating that the</td>
</tr>
<tr>
<td>Presentation and could make it their own; It was motivating that the students were given free rein to interpret their material; It was motivating to be able to suggest things for the future</td>
<td>Authentic audience (than to prepare a written synopsis, as they normally do in multi-subject courses); It was motivating to know that their powerpoint presentations might be put in the museum website; It was motivating that the students were put in charge of their presentation and could make it their own</td>
<td>This – it was not such a closed assignment; It was motivating to know that their presentation might be put on the museum’s website</td>
<td>Students were given free rein to interpret their material;</td>
<td></td>
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<tr>
<td>---</td>
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<td></td>
</tr>
<tr>
<td><strong>Feelings</strong></td>
<td>It was really exciting to learn about the business community and how it would develop in the future</td>
<td></td>
<td>This coursework was interesting because this was about her home town and its future</td>
<td></td>
</tr>
<tr>
<td><strong>Perceptions</strong></td>
<td>If something interests a person, then that person is more motivated and engaged and wants to study the subject in depth</td>
<td>The students presented their own thoughts and not just something someone else had written down or said earlier; It was good that there was not just one correct answer</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Attitude towards an organization (e.g. the museum)</strong></td>
<td>He remembered Brad because he was so knowledgeable and knew how to guide the students in their work; The museum tied all the parts of the coursework together; He might visit the archives again if he needed information about the town; He would visit the museum if it showed art; It would be more interesting at the museum if their exhibitions had themes that were related to the present;</td>
<td>The museum experts were not familiar with pedagogy, e.g. learning styles, etc.; It would be more interesting at the museum if their exhibitions had themes that were related to the present; She learned that the museum experts are available if she needed information; She learned that the museum experts really were experts - she did not know before this coursework about how much knowledge they had</td>
<td>The students learned about the function of the archives and the museum – that they look after history and keep it safe</td>
<td></td>
</tr>
</tbody>
</table>

**Table 10.10 GLO 4 2t Robert, Cissy, Steve, Mimi**

<table>
<thead>
<tr>
<th>Content</th>
<th>Robert</th>
<th>Cissy</th>
<th>Steve</th>
<th>Mimi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Having fun</td>
<td>It was fun to work</td>
<td>It was fun to work this</td>
<td>It was fun to work this</td>
<td>It was fun to work</td>
</tr>
</tbody>
</table>
**Creativity**

- The students were allowed to work creatively in this coursework – e.g. articulate their own visions about the future of the town;
- The students were given credit for “thinking out of the box”

**Exploration, experimentation and making**

- It was really interesting to learn about the history of the business community and how it is developing and link that to their own ideas about the town and business community of the future
- It was exciting that the product of the coursework was an oral presentation and not a written synopsis – this was a new process; it was exciting that the students had to think for themselves and not just reproduce what somebody else had discovered and written about

**Being inspired**

- It was inspiring to meet the experts from the museum, e.g. Brad, who was very knowledgeable about the town and the local area
- The students were given free rein - this was an atypical multi-subject course because they were not asked to look in books and come up with the correct answer;

Table 10.11 GLO 5 2t Robert, Cissy, Steve, Mimi

<table>
<thead>
<tr>
<th>Content</th>
<th>Robert</th>
<th>Cissy</th>
<th>Steve</th>
<th>Mimi</th>
</tr>
</thead>
</table>

35
### What people intend to do

<table>
<thead>
<tr>
<th>Robert</th>
<th>Cissy</th>
<th>Steve</th>
<th>Mimi</th>
</tr>
</thead>
<tbody>
<tr>
<td>He would be very likely to visit the museum and the archives again to find information; He would visit it in his spare time if there was a good exhibit, e.g. an art exhibit</td>
<td>She would not go to the museum again to see the same exhibition but if the museum had an art exhibition she would go and take her mother with her; She would visit the museum if they had exhibits that were theme-based and related to the present</td>
<td>He would probably not visit the museum in his spare time although he thought that it had played an important role in this coursework; He would use the museum for school work</td>
<td>She would be more like to visit the museum to find information for school work; She would probably not visit it in her spare time</td>
</tr>
</tbody>
</table>

### Actions (reported or observed)

<table>
<thead>
<tr>
<th>Robert</th>
<th>Cissy</th>
<th>Steve</th>
<th>Mimi</th>
</tr>
</thead>
<tbody>
<tr>
<td>The students worked extra hard because their presentations might be put on the museum website;</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Change in behavior

<table>
<thead>
<tr>
<th>Robert</th>
<th>Cissy</th>
<th>Steve</th>
<th>Mimi</th>
</tr>
</thead>
<tbody>
<tr>
<td>She learned that the museum was a good place to get information and she would use it again if she needed information for something (she would not have done so before this coursework)</td>
<td></td>
<td>He would not have used the museum for school work before this coursework</td>
<td></td>
</tr>
</tbody>
</table>

### Progression, e.g. towards further learning

<table>
<thead>
<tr>
<th>Robert</th>
<th>Cissy</th>
<th>Steve</th>
<th>Mimi</th>
</tr>
</thead>
<tbody>
<tr>
<td>She learned a lot about how to apply subject-related method and that this knowledge could be applied in other multi-subject courses</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

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**Table 10.12 Learning School cmp. to museum 2t Robert, Cissy, Steve, Mimi**

<table>
<thead>
<tr>
<th>School learning</th>
<th>Robert</th>
<th>Cissy</th>
<th>Steve</th>
<th>Mimi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning about historical sources at school: students have to read 200 pages to find out if there is something relevant for their topic</td>
<td>The students learned about being critical of historical sources; The students spend a lot of time reading in books to find the right answer;</td>
<td>At school, historical sources seem abstract;</td>
<td>In history books, everything has been researched and it is presented as if there is only one way to interpret it</td>
<td></td>
</tr>
</tbody>
</table>
Museum learning
The students were got a lot of help to find archival material they could use for their topic; It was easier to learn about historical sources at the museum because they were concrete and physical and the students could hold them in their hands; The museum tied everything together; The students could search the database and very quickly find sources that were relevant to their topic

The students could find historical sources in the archives; The students knowledge about being critical of historical sources was put to concrete use; The museum experts were not pedagogical and probably did not know about learning styles; The students learned a lot about subject-related method, e.g. GIS (Geographic information system) in geography

It was easier to learn about historical sources at the museum because the sources were actually there;

The students could find historical sources in the archives, which made it possible to verify what they were told by the speakers; The original documents at the archives have not been interpreted by others

Table 10.13 Collaboration Adults Hammersby

<table>
<thead>
<tr>
<th>Description of collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brad (M) (2t &amp; 1s)</td>
</tr>
<tr>
<td>Good collaboration, good progress, both jobs were handled well; The good thing is that the teachers set the agenda both times; The museum makes knowledge and resources available – the teachers are in charge of articulating their needs – then the partners meet and plan how best to meet these needs, and find a solution that suits both; The museum’s resources are directly applicable to the students’ curriculum and can become the content of the coursework – it is up to the teachers to say they want to use it; The museum is an informal learning environment that must provide services to the teachers and adapt to their needs; Visitor involvement at all levels is the key museum service; The teachers articulated the framework – afterwards the partners filled in the framework together and collaborated on attuning and developing their objectives; The coursework was not evaluated; The museum made objects and resources available that the school did not have and that met their needs; The planning meetings were very uncomplicated; His experience tells him that each project must start from scratch; The partnership’s past collaborations have established the knowledge in both institutions that these projects work; The key is to attune the partners’ “realities” and get them to work together – this requires great flexibility from both – if the partners are flexible, much can be accomplished; It is an organizational challenge to get these collaborations to work – it is also a question of mindset, bringing the two worlds together – it is a case of people communicating – people that have respect for the two different worlds and want to get an insight into them</td>
</tr>
</tbody>
</table>

Mickey
He received an e-mail from Brad, who asked him if he would participate in this coursework
because the museum educator did not have time to;
The planning meetings were worthwhile because he found out what the students would be working with and could prepare a back-up plan and contribute concrete suggestions;
It was stressful to have two groups of students at a time in the archives – this was something that could be improved by better planning;
The project was not evaluated with the teachers, which he would have liked in order to find out if they were satisfied with his contribution;
This was the first time he was involved in the partnership’s collaboration;
Working with two subjects [geography and history] was hard but interesting and it was exciting to be put in a situation where he had to combine the two subjects;
At the last planning meeting he pointed out that not enough time was set aside to his work with the students – Vera helped during the project by being in the archives with him and assisting with the group;
Vera’s presence in the archives was a great help because the students could ask her questions about the product which he could not advise them about;
At an evaluation meeting, he would make a point of saying that more time must be allotted to the students’ work in the archives;
The foundation for the coursework was laid this year – next year’s project would be much better

| Selma (G) (2t) | Brad visited the school twice: Once to help the students when they were finishing their coursework and once to listen to their presentations;
Brad’s help made a huge difference and the students were very happy for it;
She had never prepared multi-subject coursework so carefully before but felt duty-bound to do so because they were working with an external partner;
It would not have been possible to organize the coursework without having many meetings with the museum;
Everyone was very interested in ensuring the success of this coursework;
It made such a difference that the people from the museum were willing to spend so much time on it (e.g. it was Mickey himself, who said that they had to set more time aside for the students to be in the archives);
Mickey offered to let the students pay him an extra visit which the teachers should have encouraged them to do [none did];
It was really great that the Brad came to the school and the students got more feedback on their presentations from someone other than their teachers;
She was worried about burdening the museum with too much work |

| Vera (G) (2t) | The history teachers had often talked about using the museum but it was not until they entered into a formalized partnership with the museum that coursework had been developed;
The collaboration with Brad and Mickey was really exciting – it was fun to meet with them and plan the coursework;
It was different to work with the museum colleagues compared to working with other teachers because they have a different approaches and experiences because they come from a different institution;
It was important to legitimatize spending so much time at the museum – the teachers and Brad talked about how the two institutions needed each other;
Both partners were interested in getting the students to not just see the museum as old and musty;
Especially the museum was interested in changing the image of the museum |

| Group interview: |

| Carl (M) (1s) | Upper secondary schools were relatively unknown to him before – it was exciting to learn about their “neighbor from across the road” and that they could be of use to each other;
The collaboration started with a prospect from the teachers and then the museum and |
Dolly talked about how the museum could contribute; A plan for the collaboration was the product of this meeting; The people at the museum talked about how best to contribute to the prospect; The project was planned in detail at a later meeting which took place at the school; There were three museum people involved in the project – it should have been made more explicit who was in charge of the museum’s contribution; He saw this interview as a kind of evaluation of the collaboration.

Dolly (G) (1s) The museum educator at Lindholm Høje was eager to participate in the coursework and she had been briefed about it before they got there; She was very enthusiastic about the project and would like to do it again; She and Joe brainstormed and sent their ideas to the museum in an e-mail, after which they had a planning meeting with the museum where they worked out a timetable and who would be responsible for the different parts of the coursework; A plan for the collaboration was the product of this meeting; The next meeting was at the school; They got to know more of the museum’s staff through these meetings; Brad was gone a lot so it was easier to get in touch with Carl.

Joe (G) (1s) He was very enthusiastic about the project would like to do it again; [Joe agreed with Dolly about the collaboration]

Table 10.14 Differences - schools and museums Adults Hammersby VOID
See Table 10.15

Table 10.15 Differences - formal and informal learning environments Adults Hammersby

<table>
<thead>
<tr>
<th>Brad (M)</th>
<th>Formal / School</th>
<th>Informal / Museum</th>
</tr>
</thead>
<tbody>
<tr>
<td>You enter a classroom to read and listen; In a classroom there are grades and assessment; Students are labeled; Students are expected to play certain roles and are pressured into playing certain roles; The classroom is not a neutral space – it is a high-tension space; It smells of exams and tests and of performing to a set standard; There are no objects in the classroom; One does not go into the classroom to see</td>
<td>You enter a museum to see things – you can read and listen too, if you want to; Students do not have to play certain roles at the museum; In the museum space one is confronted with objects and a narrative – these are the pivotal points of the museum; The museum space is connected to experts who bring the narratives and objects to a higher level by means of the living word – they translate and interpret for visitors; The museum produces knowledge – it produces cultural heritage; The combination of the museum space (the physical space, objects and narratives) and the experts who interpret it offer an alternative learning environment to the school’s; The museum space is a neutral space in comparison to the students’ normal school life; The museum spans many types of dissemination and mediation;</td>
<td></td>
</tr>
</tbody>
</table>

12 A Viking burial ground, see http://www.nordmus.dk/lindholm-gb (Accessed Mar. 23, 2014) As part of the coursework, the students visited this heritage site.
<table>
<thead>
<tr>
<th>Mickey (M) (2t)</th>
<th>School books can be replaced;</th>
<th>The museum has archives and objects to look at – these things are unique – if they are lost or broken, they cannot be replaced and posterity will not be able to learn from them; There is a respect for objects and archives and they are protected for posterity; The museum is a free space for the students; The museum is a knowledge bank, where they can talk to experts and study real things that they cannot find anywhere else; The students can move around on their own</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selma (G) (2t)</td>
<td>There are rules and limits which someone else has defined (not the students); There is always a correct answer that the students have to find; The students are required to do things and they are assessed</td>
<td>At the museum, students are in the real world; They meet things, not workbooks; They meet people who have a different perspective on learning experiences They have to think for themselves – there is not just one answer; Museum objects have significance in real life and not just for the sake of learning; ❯ there are rules and limits at the museum, too</td>
</tr>
<tr>
<td>Vera (G) (2t)</td>
<td>At school they read books and theories</td>
<td>Being able to see things makes the experience more significant and useful; The museum is more real;</td>
</tr>
<tr>
<td>Carl (M) (1s)</td>
<td>The hands-on and physical activities at the museum helped make theories tangible; The students substantiated their theories by using their hands and whole bodies to investigate; The subject-related dimension was strengthened by learning the correct, subject-related terminology</td>
<td></td>
</tr>
</tbody>
</table>

The museum is not only informal because it also has rules and a codex of behavior; There are also learning objectives, e.g. in this coursework – the museum becomes a formal informal learning environment.
Appendix All Tables

| **Dolly (G) (1s)** | The learning environment created in this coursework was many things, e.g. scientific and creative. In this coursework, the museum and the school were both formal and informal learning environments – they were mixed because the students’ activities within the coursework took place both places. The structure of the coursework was different because it took place many places (school, museum, ring fortresses, Viking burial grounds) – this was something the students really liked. The teachers and museum professionals created a framework within which these activities unfolded. The students made use of totally different abilities than if they were in school studying historical sources – the learning environment was much, much more varied than it normally is. |
| **Joe (G) (1s)** | In this coursework, the museum and the school were both formal and informal learning environments – they were mixed because the students’ activities within the coursework took place both places |

Table 10.16 GLO 1 Adults Hammersby

| **GLO 1 Knowledge and understanding**13 |
| **Brad (M) (1s & 2t)** | The students: |
| | - met historians and archaeologists and became acquainted with their perspectives on the coursework; |
| | - discovered that there were many answers to their questions and that theories can complement or contradict each other → scientific thinking; |
| | - combined knowledge from school with knowledge from the museum → gained a well-rounded understanding of the tasks at hand; |
| | - learned that the museum creates significant meaning through its work; |
| | - saw that the museum does not have all the answers and is not omniscient; |
| | - gained an insight into the diversity and complexity of cultural heritage |
| **Mickey (M) (2t)** | The students: |
| | - learned that the museum does not have all the answers; |
| | - did not present 100% correct facts about their town but all in all they got a pretty good understanding of the history of the town; |
| | - did not study their group-subjects in depth and the photos they found could have been found on the internet so they might have been able to do the coursework without even visiting the archives but they did learn a little bit about how difficult it is to search for the information they needed; |
| | - got a new perspective on their town and to see it in a historical perspective; |
| | - learned facts about the development of towns and railways in general – about Denmark’s development, really; |
| | - gained an insight into how archaeologists do research and use their finds to create knowledge; |
| | - learned information and knowledge from many different experts; |
| | - learned to respect the archival material and the archives are constantly expanding; |
| | - did not learn how much effort it takes to collect and order archival material |

13 Knowing what or about something; Learning facts or information; Making sense of something; Deepening understanding; How museums, libraries and archives operate; Making links and relationships between things [http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/](http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/) (Accessed Jan. 22, 2104)
because he did not have time to tell them about it

<table>
<thead>
<tr>
<th>Selma (G) (1s)</th>
<th>The students:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- learned about the history of their town from the chairman of the board of the museum and seeing it from his perspective;</td>
</tr>
<tr>
<td></td>
<td>- learned more about method in this multi-subject coursework than the other multi-subject courses they had had;</td>
</tr>
<tr>
<td></td>
<td>- learned to address and work within a new learning environment;</td>
</tr>
<tr>
<td></td>
<td>- learned from having their work taken seriously by the museum;</td>
</tr>
<tr>
<td></td>
<td>- learned about local public works of art;</td>
</tr>
<tr>
<td></td>
<td>- learned that their coursework was NOT just about producing a product for a grade</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vera (G) (1s)</th>
<th>The students:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- learned subject-related method (history);</td>
</tr>
<tr>
<td></td>
<td>- gained an insight into how a historian works;</td>
</tr>
<tr>
<td></td>
<td>- learned that a single museum object can produce a lot of knowledge;</td>
</tr>
<tr>
<td></td>
<td>- learned that the museum reflects the history of the local area;</td>
</tr>
<tr>
<td></td>
<td>- became aware of the connection between collecting objects and producing and disseminating knowledge about them;</td>
</tr>
<tr>
<td></td>
<td>- got a sense of the importance of knowing one’s roots;</td>
</tr>
<tr>
<td></td>
<td>- have gained subject-related and multi-subject course related knowledge;</td>
</tr>
<tr>
<td></td>
<td>- experienced the museum professionals’ enthusiasm and expertise and thereby got a sense of the importance of their work</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Carl (M) (1s)</th>
<th>The students:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- learned that knowledge is not absolute;</td>
</tr>
<tr>
<td></td>
<td>- learned correct subject-related terminology;</td>
</tr>
<tr>
<td></td>
<td>- met historians, archaeologists, conservators and an archivist and became acquainted with their professional terminologies;</td>
</tr>
<tr>
<td></td>
<td>- used their senses and bodies as a way of substantiating their theories and reaching a deeper perception of phenomena;</td>
</tr>
<tr>
<td></td>
<td>- formed their own theories about historical events and had a sense of ownership;</td>
</tr>
<tr>
<td></td>
<td>- increased their knowledge about history</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Dolly (G) (1s)</th>
<th>The students:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- learned how to be critical regarding historical resources and ask critical questions;</td>
</tr>
<tr>
<td></td>
<td>- understood the concept of hypothesis and the difference between hypothesis and theory;</td>
</tr>
<tr>
<td></td>
<td>- learned about museum dissemination and the theory behind it;</td>
</tr>
<tr>
<td></td>
<td>- tried out in practice what they had learned in theory, e.g. learning about Viking weaponry and shooting arrows from the moats around the ring fortresses and then evaluate the defense of the fortresses</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Joe (G) (1s)</th>
<th>The students:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- learned how to be critical regarding historical resources and ask critical questions;</td>
</tr>
<tr>
<td></td>
<td>- learned about the value of theory and hypothesis and how asking questions brings knowledge forward;</td>
</tr>
<tr>
<td></td>
<td>- learned a great deal of subject-specific method (historical method, mathematical method), not least because of the way the coursework was set up, which made them excited about the ring fortresses;</td>
</tr>
<tr>
<td></td>
<td>- investigated the fortress’ defensive structures, e.g. to see if they could jump over the moat;</td>
</tr>
<tr>
<td></td>
<td>- learned to use correct subject-relevant terminology</td>
</tr>
</tbody>
</table>
### Table 10.17 GLO 2 Adults Hammersby

<table>
<thead>
<tr>
<th>Name</th>
<th>Gender</th>
<th>Age</th>
<th>Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brad</td>
<td>M</td>
<td>1s&amp;2t</td>
<td>Learned how to ask question about objects; Got practice challenging experts about their theories</td>
</tr>
<tr>
<td>Mickey</td>
<td>M</td>
<td>2t</td>
<td>Learned about searching an archive’s database, e.g. which words to use; Learned to maneuver out of dead-ends in the database; Got an impression of how complicated it is to research a certain site or building in their town; Learned that history is not always written down and that there is not a book about any given subject</td>
</tr>
<tr>
<td>Selma</td>
<td>G</td>
<td>1s</td>
<td>Learned about GIS (Geographic Information System) and how it is applied by archaeologists – the students work with GIS in school so it was great to see how the archaeologist used it in real life; Got practice asking experts questions; Learned how to apply the subject-related method in their presentations; Learned about searching for information in the archive’s database; Learned how to piece together lots of different types of information in order to make their presentation and show that they understood the subject-related methods.</td>
</tr>
<tr>
<td>Vera</td>
<td>G</td>
<td>1s</td>
<td>Learned about how museum professionals work and what their expertise is good for; Got practice in taking notes at the lectures; Learned how to collaborate in their groups;</td>
</tr>
<tr>
<td>Carl</td>
<td>M</td>
<td>1s</td>
<td>The student learned to use the museum in a new way; They got practice shooting with a bow and arrow</td>
</tr>
<tr>
<td>Dolly</td>
<td>G</td>
<td>1s</td>
<td>Learned about dating finds, e.g. skulls and teeth; Some of the academically weak girls were really good at drawing and experienced success for a change; Some of the boys who cannot sit still for one minute experienced freedom of movement; The teachers had picked students for the groups so the students got to know each other in a new way</td>
</tr>
<tr>
<td>Joe</td>
<td>G</td>
<td>1s</td>
<td>Learned about how archaeologists find information in traces of discoloring in the ground; Experienced success in their groups because the coursework and groups were organized with the aim of enabling as many (types of) students as possible to contribute to their mutual task; Got to know their classmates better by being “forced” to work with them</td>
</tr>
</tbody>
</table>

14 Knowing how to do something; Being able to do new things; Intellectual skills; Information management skills; Social skills; Communication skills; Physical skills  
Table 10.18 GLO 3 Adults Hammersby

| Brăd (M) (1s & 2t) | The teachers had presented different theories to the students about the same historical events, making them very curious and highly motivated to find out more; Their attitude to the museum was probably not changed but that did not matter for the moment (they will be interested in twenty years); He could sense enthusiasm and excitement when he talked to the students before he took them on a tour of the museum; A deep-felt attitude a lot of young people have regarding museums is that they are boring and dusty; |

| Mickey (M) (2t) | The two teachers inspired the students and got them to feel that this coursework was very exciting; The students met a former mayor, a bank director and a historian, who each gave them their version of Ashton; The students were motivated because visiting the archives provided them with a free space where they could sit down or get up as the saw fit – they themselves were in charge of their learning; The students interviewed different people and that was a learning experience and motivating for them; He felt sure that the students’ attitude toward the museum had been changed by doing this coursework, e.g. at first one student had told Brad that museums were mightily boring but afterwards she was very enthusiastic and had changed her views; The fact that they were competing with each other was motivating (the best presentation was going to be put on the museum’s website); The fact that the best of their products would be put in the archives as archival material and uploaded onto the museum’s webpage was very motivating; He overheard that the students had met to work in the evening too which was a sign that they had taken the coursework very seriously |

| Selma (G) (1s) | The students: - Noticed how enthusiastic the teachers were; - Expected the coursework to be exciting and interesting; - Were a little nervous if they could live up to the teachers’ expectations; - Were motivated because the tasks they were given were not fictive but had as their point of departure something local politicians had done and the adults wanted to hear their perspective – their opinions were important; - Were motivated by being told that it was up to them to decide how to do their work and they were given the freedom and responsibility to do that |

| Vera (G) (1s) | The students: - Gained self-confidence from interviewing adults at the local sites they were investigating; - Got practice in talking to adults they did not know; Some of the students might have changed their attitude about the museum – one student asked his parents why they had never taken him to the museum before |

15 Feelings; Perceptions; Opinions about ourselves (e.g. self esteem); Opinions or attitudes towards other people; Increased capacity for tolerance; Empathy; Increased motivation; Attitudes towards an organization; Positive and negative attitudes in relation to an experience

Appendix All Tables

| Carl (M) (1s) | The students:  
| | - learned a lot about the museum but he was not sure that their attitude toward it had changed;  
| | - seemed very receptive (compared to other students);  
| | - learned that they could get and find information at the museum |

| Dolly (G) (1s) | The students wanted to stay longer at the museum because they wanted to look at every display case and wanted to hear more about the objects they saw;  
| | Some of the students said that they normally thought math was boring but discovered in this coursework that it was really fun – they learned new math concepts and then applied them right away to make a model or make sure that the historical measurements were correct and that they fit the model |

| Joe (G) (1s) | The students were motivated by the break in the routine;  
| | The students told him that they thought it was really good coursework |

Table 10.19 GLO 4 Adults Hammersby

| Brad (M) (1s & 2t) | The students were enthusiastic and seemed to enjoy themselves – one girl was so excited about the museum that she wanted to become a volunteer;  
| | Positive experiences promote learning and shooting arrows with a bow was a positive, hands-on experience for many of the students;  
| | Hands-on experiences get people’s attention and they remember them; |

| Mickey (M) (2t) | The students started thinking out of the box to find photos etc that they could use when they were searching the archive’s database;  
| | The teachers inspired their students by showing them that they thought this was really exciting;  
| | The students:  
| | - Were very resourceful when they were finding people to interview;  
| | - Were very determined to collect good material for their presentation;  
| | There was a good atmosphere when the students were working at the archives;  
| | Exciting coursework and experiences promote learning – if one is bored, one does not pay attention |

| Selma (G) (1s) | The students:  
| | - Were very enthusiastic about getting help from Brad when he visited them at school;  
| | - Were goal-oriented because they thought the coursework was exciting;  
| | - Were excited because their products (on the museum’s website) would be seen by an authentic audience;  
| | - Were extremely stimulated by being given a task where no limits were set (their task was to make a case for how their town would develop in the future);  
| | - Enjoyed not having to write a fifteen-page paper as their product and having the opportunity to think out of the box;  
| | This coursework focused on the process more than the product and which made it possible |

16 Having fun; Being surprised; Innovative thoughts; Creativity; Exploration, experimentation and making; Being inspired [http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/](http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/)  
(Accessed Jan. 23, 2014)
for many different types of students to contribute successfully

<table>
<thead>
<tr>
<th>Vera (G) (1s)</th>
<th>This coursework made it possible for knowledge to be achieved through “play”; The students could sense that the teachers and museum staff thought this coursework was fun and that was “catching” – they were influenced by it</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carl (M) (1s)</td>
<td>Some of the students stayed after class to shoot arrows – so even nearly grown-up students thought doing that was fun; When Brad opened up the “secret box” containing a couple of teeth and an old dagger, the students flocked around to see what it was – they were very curious; The students were hungry for knowledge; It was clear that hands-on activities connected to strict subject-related work resulted in deeper knowledge</td>
</tr>
<tr>
<td>Dolly (G) (1s)</td>
<td>The students were very proud of their product (a game with a wheel of fortune with historical sources) and of its being exhibited at the museum – they wanted to play the game; Many of the students found out that math was fun; They learned how to apply math</td>
</tr>
<tr>
<td>Joe (G) (1s)</td>
<td>The students ran around at the ring fortress and tried to find objects and one of them actually did so that was a lot of fun; They thought it was fun to make their own theories and then find sources to substantiate them; They investigated the defenses (of the ring fortress) to see if they could jump over the moat; They enjoyed the break in the routine; This coursework had something for everyone: The students who were good at reading, the students who want to try out new things, the students who wanted to shoot arrows; The students felt that what they did was a success</td>
</tr>
</tbody>
</table>

Table 10.20 GLO 5 Adults Hammersby

<table>
<thead>
<tr>
<th></th>
<th>GLO 5 Activity, behavior and progression 17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brad (M) (1s &amp; 2t)</td>
<td>One of the students wanted to become a volunteer at the museum</td>
</tr>
<tr>
<td>Mickey (M) (2t)</td>
<td>Some of the students thought “out of the box” in order to find the information they needed on the archive’s database</td>
</tr>
</tbody>
</table>
| Selma (G) (1s) | The students:  
- Took the coursework more seriously than other classes would  
- Were very determined to do well  
- Sensed that the teachers were excited about the coursework and wanted to live up to their expectations  
- Very interested in exploring the town and learning about it; It was good to send the students out into the world outside the school’s front door and let them discover things they had not seen before; She was surprised that none of the students “fell through” or opted out of doing the work |

17 What people do; What people intend to do; What people have done; Reported or observed actions; A change in the way people manage their lives  
they were all very focused on doing the work; This coursework and the way the groups were formed made it possible for everyone to participate and use abilities and skills they did not normally use – this was a learning experience for them.

| Vera (G) (1s) | Many students showed a lot of initiative (calling up people and making appointments for interviews, etc.); They learned that calling the right people benefited their projects; |
| Carl (M) (1s) | The students:  
- Very open and receptive, not complacent / laid-back at all  
- Did not just sit back and wait for someone to hand them knowledge  
- Very polite  
- Wanted to get something out of the coursework; |
| Dolly (G) (1s) | A couple of the students volunteered to work as volunteer guides; Some of the students met and spoke with the press at the reception at the museum; |
| Joe (G) (1s) | The students applied their learning experiences from the coursework in their history lessons many times; Some of the students asked if there were excavations in the summer where they could be volunteers |

### Table 10.21 Learning about the students Adults Hammersby

<table>
<thead>
<tr>
<th>Brad (M)</th>
<th>Learning about the students</th>
</tr>
</thead>
</table>
| Mickey (M) (2t) | The students:  
- Chose very broad search words when searching on the archive’s database  
- Needed to be taught better how to narrow their searches and find what they could use  
- Have a lot of computer experience  
- Were extremely curious and asked him many questions, some of which he could not answer  
He himself discovered something new about how to find information on his system from the students’ way of searching; |
| Carl (M) (1s) | The students:  
- Asked qualified questions about finds  
- Stayed after school to do archery (some students)  
- Were not laid back or complacent  
- Polite  
- Were open-minded and hungry for knowledge  
- Had a sense of ownership re. the theories they articulated |
| Selma (G) (2t) | The teachers gave the students too much information about the coursework to start with – it should have been spaced out and repeated many times instead;  
The students:  
- Very conscientious and slightly nervous about Brad coming to see their presentations  
- Should have been better prepared (by their teachers and Mickey) for their work in the archives – some of the groups chose to use the first photos they found instead. |
She had NEVER experienced students work in such a goal-oriented manner before; This coursework made it possible for the students to see their town in a new perspective; She realized that the students had been motivated by the freedom of the coursework – it was their responsibility to find relevant material (photos at the archives, interviewees, etc); It was a surprise that ALL the students were active and none fell through; Weaker students achieved success because they were in a situation where their personal opinion was an important and valid input to the presentation;

<table>
<thead>
<tr>
<th>Vera (G)(2t)</th>
<th>The students were VERY busy; She was not their history teacher and realized that the students had not been prepared for the coursework in their history lessons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dolly (G)(1s)</td>
<td>The students were critical of the theories they were told by experts from the museum; Some of the weaker girls were good at drawing and could interpret the essence of the historical source artistically, and in that way they contributed to their group’s work and experienced success</td>
</tr>
<tr>
<td>Joe (G)(1s)</td>
<td>Some of the weaker students were good at answering some of the questions in the Wheel of Fortune game and experienced success</td>
</tr>
</tbody>
</table>

**Table 10.22 Adult’s learning – Brad**

<table>
<thead>
<tr>
<th>Learning:</th>
<th>Brad (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>About oneself</strong></td>
<td>He was reinforced in his opinion that museums must be open to the community and respect and gain experience from and about other “worlds;” He did not feel that he had really learned anything new from the collaborations (three in all with Hammersby Gymnasium); The museum became better at working with upper secondary schools; The museum gained insight into how school projects are organized</td>
</tr>
<tr>
<td><strong>About one’s colleagues</strong></td>
<td>He did not learn anything new about the staff</td>
</tr>
<tr>
<td><strong>About one’s partner institution</strong></td>
<td>When the teachers tell the museum what they need, the collaboration works</td>
</tr>
<tr>
<td><strong>From one’s partner institution</strong></td>
<td>He had learned about how multi-subject courses can be structured from the Ring Fortresses coursework</td>
</tr>
</tbody>
</table>

**Table 10.23 Adult’s learning – Carl**

<table>
<thead>
<tr>
<th>Learning:</th>
<th>Carl (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>About oneself</strong></td>
<td>The more experience he gets working with schools, the better he knows how to meet their needs; What he learned from this coursework can be applied to other schools, e.g. what the museum has to offer</td>
</tr>
<tr>
<td><strong>About and changing one’s practice</strong></td>
<td>The more experience he gets working with schools, the better he knows how to meet their needs; What he learned from this coursework can be applied to other schools, e.g. what the museum has to offer</td>
</tr>
</tbody>
</table>
It was difficult to know who was in charge of the coursework at the museum; In the future it would be a good idea if the museum was clearer about who was in charge of the coursework.

He did not normally work with upper secondary schools so he learned a lot during this coursework; It was good to get acquainted with the school [which is just across the road from the museum]; It was great to see that the students were asked to form their own theories and that they were proud of them.

<table>
<thead>
<tr>
<th>About one's colleagues</th>
<th>About one's partner institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>It was difficult to know who was in charge of the coursework at the museum; In the future it would be a good idea if the museum was clearer about who was in charge of the coursework.</td>
<td>He did not normally work with upper secondary schools so he learned a lot during this coursework; It was good to get acquainted with the school [which is just across the road from the museum]; It was great to see that the students were asked to form their own theories and that they were proud of them.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>From one's partner institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
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</tbody>
</table>

Table 10.24 Adult’s learning – Dolly

<table>
<thead>
<tr>
<th>Learning: Dolly (G) (1s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>About oneself</td>
</tr>
<tr>
<td>About and changing one’s practice</td>
</tr>
<tr>
<td>About one’s colleagues</td>
</tr>
<tr>
<td>From one’s partner institution</td>
</tr>
</tbody>
</table>

It was fun to learn about new theories that had not even been published yet – they were told that it would take ten years before some of the things they were told about at the museum were published; She gained insight into recent research; She learned about strontium isotope analysis and other methods used for dating and identifying material from finds; She learned about how archaeologists and museums build theories in their research; The teachers learned a lot, e.g. about archaeology and archaeological method and about how they use finds and objects as their empirical material.

Table 10.25 Adult’s learning – Joe

<table>
<thead>
<tr>
<th>Learning: Joe (G) (1s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>About oneself</td>
</tr>
<tr>
<td>About and changing one’s practice</td>
</tr>
</tbody>
</table>
### Table 10.26 Adult's learning – Mickey

<table>
<thead>
<tr>
<th>Learning:</th>
<th>Mickey (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>About oneself</td>
<td>Participating in this coursework opened up a whole new world for him;</td>
</tr>
<tr>
<td></td>
<td>He was set in his ways and it was an interesting challenge to adapt to the students way of thinking and working</td>
</tr>
<tr>
<td>About and changing one's</td>
<td>He learned about being in charge of thirty students at one time;</td>
</tr>
<tr>
<td>practice</td>
<td>He learned about how to explain about the archives to students;</td>
</tr>
<tr>
<td></td>
<td>He learned that talking with the students was a very different experience than talking to a 60-year-old person researching his family tree;</td>
</tr>
<tr>
<td></td>
<td>The next time he does coursework like this:</td>
</tr>
<tr>
<td></td>
<td>- he will help them find the right search words to use when they search the archive’s database</td>
</tr>
<tr>
<td></td>
<td>- he will spend more time per group explaining the principles of the archive’s database</td>
</tr>
<tr>
<td></td>
<td>- he will get the archival material for the students as soon as they have found what they need on the database so they can see the connection between the database and the archives itself;</td>
</tr>
<tr>
<td></td>
<td>Prior to the students’ visit, he and Brad had talked about how to make the museum more interesting for the students;</td>
</tr>
<tr>
<td></td>
<td>He and the museum educators at the museum were planning to adapt the coursework and use it for elementary school students;</td>
</tr>
<tr>
<td></td>
<td>He made a case file after the coursework to save for next time because he wanted to be better prepared</td>
</tr>
<tr>
<td>About one’s colleagues</td>
<td>During the guided tour of the museum, Brad made an effort to adjust the style of his language and his vocabulary to be interesting for upper secondary school students</td>
</tr>
<tr>
<td></td>
<td>He and his colleagues had started talking more at lunch break about developing coursework for elementary school students</td>
</tr>
<tr>
<td>About one’s partner</td>
<td>The students need to know more about history and the historical development of the town and what their focus is going to be before they start work at the archives;</td>
</tr>
<tr>
<td>institution</td>
<td>He learned what the teachers wanted him to offer the students;</td>
</tr>
<tr>
<td></td>
<td>He and Vera had talked a lot about what they wanted the students to find and they were to go about it;</td>
</tr>
<tr>
<td>From one’s partner</td>
<td>It was interesting to see how the students worked with the archival material and what they decided not to use;</td>
</tr>
<tr>
<td>institution</td>
<td>He wanted to know what the teachers thought of his performance so that he do better the next time</td>
</tr>
</tbody>
</table>
Table 10.27 Adult’s learning – Selma

<table>
<thead>
<tr>
<th>Learning:</th>
<th>Selma (G) (2t)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>About oneself</strong></td>
<td>She learned a lot from working with other people and seeing different methods</td>
</tr>
<tr>
<td><strong>About and changing one’s practice</strong></td>
<td>This coursework was great because it was so different from what they normally do; The teachers should have spent more time preparing the students for the coursework [Vera was not the students’ regular history teacher]; The next time they do this coursework: - they will prepare the students better by giving them smaller bits of information and repeating them many times - they will set more time aside for practical work, e.g. searching the archive’s database and discussing what the students find there - they will review the groups’ process halfway through to make sure everybody is on the right track - remove some of the other work to make room for this; She had never prepared a multi-subject course so carefully before but she had felt that it was necessary because they were working with external partners</td>
</tr>
<tr>
<td><strong>About one’s colleagues</strong></td>
<td>She and Vera got to see each other perform outside of school, in the real world, in a different context;</td>
</tr>
<tr>
<td><strong>About one’s partner institution</strong></td>
<td>She learned that their partners in the collaboration: - were very determined to create a successful project with the teachers - were prepared to spend a lot of time on developing and implementing the coursework - were incredibly accommodating and helpful</td>
</tr>
<tr>
<td><strong>From one’s partner institution</strong></td>
<td>She learned that the museum was a fantastic resource and that she was ashamed that she had not used it before</td>
</tr>
</tbody>
</table>

Table 10.28 Adult’s learning – Vera

<table>
<thead>
<tr>
<th>Learning:</th>
<th>Vera (G) (2t)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>About oneself</strong></td>
<td>It was a moving experience to participate in this coursework because she herself was born in this town and had grown up there; She learned a lot from the collaboration; When it means something personal, one makes a greater effort</td>
</tr>
<tr>
<td><strong>About and changing one’s practice</strong></td>
<td>The next time she participates in this coursework, she wants to do it with her own class and not another teacher’s class because this class did not know her and she did not know them – one week was not enough to get to know them;</td>
</tr>
<tr>
<td><strong>About one’s colleagues</strong></td>
<td>The students’ history teacher did not get involved and would not be able to use or reinforce the students’ learning in the future</td>
</tr>
<tr>
<td><strong>About one’s partner institution</strong></td>
<td>It was very interesting to be at the museum and the collaboration with Brad and Mickey was very exciting; It was fun to toss ideas back and forth and then see how one idea inspires the next and they grow into something that the partners want to do together; The partners learned that they needed each other</td>
</tr>
<tr>
<td><strong>From one’s partner institution</strong></td>
<td>She heard Brad tell the student that when one is past the age of forty, one discovers that one has a history. 18-year-olds do not think that way, they are focused on the future. So one’s interest in culture and history often does not blossom until one is older</td>
</tr>
</tbody>
</table>
Table 10.29 Motivation for participation Adults Hammersby

<table>
<thead>
<tr>
<th>Motivation for participation and enjoying oneself</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brad (M) (2t&amp;1s)</strong></td>
</tr>
<tr>
<td>The collaboration allows the museum as a learning environment to be used as it was meant to be: The teachers present an idea or their needs and the museum does its best to accommodate. The purpose of the museum is to make its knowledge, collections and expertise available.</td>
</tr>
<tr>
<td><strong>Mickey (M) (2t)</strong></td>
</tr>
<tr>
<td>He received an e-mail from Brad asking him to participate in the project because the museum educator could not do it; The coursework can be remodeled to fit other students, also elementary school students (he had already spoken to the museum educators about it); It was exciting to teach the students about their own town because they got a new perspective on it and they will take this learning with them.</td>
</tr>
<tr>
<td><strong>Vera (G) (2t)</strong></td>
</tr>
<tr>
<td>It was a good thing that the school joined interface – it made it possible for the teachers to become involved in a big project with the museum; It was also possible because Brad, the director of the museum, was keen on the idea; It was really good to work with a professional historian; The coursework lent itself well to the students learning about subject-related method; Guided tours at the museum are good but this was much better; The students learn about how knowledge is created; The students learn about their local area, where they have their roots – knowing about where you come from gives them greater freedom when they start something new – realizing that where they come from is important; Both partners gain from the partnership.</td>
</tr>
<tr>
<td><strong>Selma (G) (2t)</strong></td>
</tr>
<tr>
<td>The main thing was to get the students to learn about their town.</td>
</tr>
<tr>
<td><strong>Carl (M) (1s)</strong></td>
</tr>
<tr>
<td>He wanted the student to learn how to use the museum in a new way; It was exciting to participate because he did not have much experience in working with upper secondary schools; He thought it was great to meet the teachers from across the road and that to find out that they could be of use to each other.</td>
</tr>
<tr>
<td><strong>Dolly (G) (1s)</strong></td>
</tr>
<tr>
<td>She and Joe had worked together before and they volunteered when their principal asked who wanted to do it; Coursework of this scale can only be implemented if more than one teacher / subject participates – multi-subject courses are the most suitable.</td>
</tr>
<tr>
<td><strong>Joe (G) (1s)</strong></td>
</tr>
<tr>
<td>He and Dolly had worked together before on a Viking project so they decided very quickly that this coursework should be about Vikings and Viking ring fortresses, which is important cultural heritage in that area; The coursework lent itself well to the students learning about subject-related method.</td>
</tr>
</tbody>
</table>

Table 10.30 SWOT Hammersby – Brad

<table>
<thead>
<tr>
<th>Strengths</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brad (M)</strong></td>
</tr>
<tr>
<td>The collaboration is uncomplicated; The museum and the school have different missions and work in different directions.</td>
</tr>
</tbody>
</table>
but within similar fields of activity – there is great potential in bringing the two areas of knowledge together and that is a strength; The school and the museum elucidate fields of knowledge from different angles

**Weaknesses**
- If the teachers do not see the advantages of working with the museum;
- If the teachers’ expectations exceed what the museum can provide;
- If the teachers end up expecting the museum to provide everything;
- The lack of resources always puts a limit on ambitions;
- The museum is small and much of the work is organized and funded as temporary projects, which sometimes makes it difficult

**Opportunities** None

**Threats** There are no threats – both organizations have limits and the trick is to get the two realities to work together

---

**Table 10.31 SWOT Hammersby – Carl**

<table>
<thead>
<tr>
<th>Strengths</th>
</tr>
</thead>
<tbody>
<tr>
<td>The school and the museum are next-door neighbors;</td>
</tr>
<tr>
<td>That now the museum and the school know each other now – they know people they can send an e-mail to</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>If the museum is unclear about who is in charge of their contribution to the collaboration because then it becomes the school’s project and that is a weakness</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>The museum has finds of the highest standard nationally and in the world – they could be put to more use in the local area and in relation to the school</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited resources – archaeologists and historians have many other responsibilities and how can the museum find the resources to take them off these jobs to work with the students – however much the museum wants to do so because it is important for the students to meet and communicate with experts;</td>
</tr>
<tr>
<td>Limited resources – it is difficult for the museum to send many people to lots of meetings so the threat is how to keep the collaboration alive</td>
</tr>
</tbody>
</table>

---

**Table 10.32 SWOT Hammersby – Dolly**

<table>
<thead>
<tr>
<th>Strengths</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is a lot of publicity in the collaboration, e.g. newspaper articles;</td>
</tr>
<tr>
<td>The teachers’ professional horizon are broadened e.g. by learning about archaeology and archaeological methods and working with the objects themselves, not books;</td>
</tr>
<tr>
<td>That the teachers (and students) have access to the objects;</td>
</tr>
<tr>
<td>The teachers know people at the museum now they can send an e-mail to</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>If the communication between the partners becomes unclear;</td>
</tr>
<tr>
<td>Brad was the person the teachers communicated with and he was away from the museum a lot</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using the museum and its unique collections even more</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are limited funds available for field trips, e.g. to the ring fortresses and the excavations;</td>
</tr>
<tr>
<td>The school gave extra funds the first time the teachers collaborated with the museum but that is not something that will continue so teachers might be less willing to participate</td>
</tr>
</tbody>
</table>

---

**Table 10.33 SWOT Hammersby – Joe**

<table>
<thead>
<tr>
<th>Strengths</th>
</tr>
</thead>
<tbody>
<tr>
<td>The school and the museum are next-door neighbors;</td>
</tr>
</tbody>
</table>
The there is so much to see in the local area – on a half-day field trip, the students got to see an amazing number of things; Being able to consult with experts from the museum

<table>
<thead>
<tr>
<th>Weaknesses</th>
<th>none</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunities</td>
<td>The school would probably spend extra funds on repeating this coursework because of the press coverage; Using the museum’s collections more</td>
</tr>
<tr>
<td>Threats</td>
<td>Every time the teachers organize a field trip, they must get funds from the school</td>
</tr>
</tbody>
</table>

Table 10.34 SWOT Hammersby – Mickey

<table>
<thead>
<tr>
<th>Mickey (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strengths</strong></td>
</tr>
<tr>
<td><strong>Weaknesses</strong></td>
</tr>
<tr>
<td><strong>Opportunities</strong></td>
</tr>
<tr>
<td><strong>Threats</strong></td>
</tr>
</tbody>
</table>

Table 10.35 SWOT Hammersby – Selma

<table>
<thead>
<tr>
<th>Selma (G)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strengths</strong></td>
</tr>
<tr>
<td><strong>Weaknesses</strong></td>
</tr>
<tr>
<td><strong>Opportunities</strong></td>
</tr>
<tr>
<td><strong>Threats</strong></td>
</tr>
</tbody>
</table>
### Table 10.36 SWOT Hammersby – Vera

<table>
<thead>
<tr>
<th></th>
<th>Vera (G)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strengths</strong></td>
<td>Both institutions become stronger from working together</td>
</tr>
<tr>
<td><strong>Weaknesses</strong></td>
<td>Teachers can manage on their own – they really do not need to use the museum</td>
</tr>
</tbody>
</table>
| **Opportunities** | The local press is very interested in the school and the school’s partnership with the museum will continue to give good publicity;  
The school is in competition with other institutions to secure students, so more positive press coverage and good stories, the better it is for our reputation;  
The partnership with the museum is an asset |
| **Threats** | If doing projects like this starts involving too much red tape;  
If management does not supply funding for the teachers to develop the partnership / collaboration |
# Shoresby Gymnasium and Shoresby Museum

## Table 11.1 GLO 1d Neal, Richard, Sean, Suki

<table>
<thead>
<tr>
<th>Content</th>
<th>Neal</th>
<th>Richard</th>
<th>Sean</th>
<th>Suki</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Understanding connections between activities</strong></td>
<td>He had lived in an apartment building from before 1900 and remembered that in the winter it was cold there in the mornings, like what he learned about the Workers’ Apartments; Some of the windows in his family’s apartment were really old, others were double-glazed – the windows in the Workers’ Apts. were double-glazed – that was taking liberties with authenticity; The double-glazed windows were necessary – at a museum, authentic things like the old windows must only be replaced for a good reason; It was important for the students’ parents to see that their children actually learn things at school, as they spend so much time there</td>
<td>Talking with the museum’s Auntie gave them firsthand knowledge of history – suddenly history was given a face and was not just something they read about in a book;</td>
<td>Learning about the ice on the residents’ bedding made him think of his own bedroom; His parents were very surprised at how well the students had done – his mother said she had gained new knowledge about the history of the town – he had not known these things either but was happy that he did now</td>
<td>Learning about the ice on the residents’ bedding made her think of her own bedroom – she was glad that she did not live there</td>
</tr>
<tr>
<td><strong>Subject-related</strong></td>
<td>His group’s topic was about electricity and</td>
<td>Because of his group’s topic (engine rooms from the days of the</td>
<td>His group decided to tone down the physics part of their</td>
<td>She felt that she gained most knowledge for this</td>
</tr>
<tr>
<td><strong>learning and relevancy</strong></td>
<td>had a lot to do with physics, and the museum was mostly about history, so they could not get so much help; In relation to their history subject, it was a great advantage to work at the museum</td>
<td>Gasworks), it was easy to find material at the museum to use in their presentation; The Workers Apts. were about social studies and history and Danish – how they are explained and mediated; The museum’s Auntie in the Workers’ apt. was a firsthand historical source</td>
<td>presentation because it was too difficult for their listeners</td>
<td>coursework at school - at the museum they found out about how to present their topics;</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>Learning about the museum</strong></td>
<td>the windows in the Workers’ Apts. were double-glazed – that was taking liberties with authenticity; The double-glazed windows were necessary – at a museum, authentic things like the old windows must only be replaced for a good reason</td>
<td>His group got a lot of help and information from the museum; The museum was not made for science subjects, but for the humanities, like history and social studies; There was more soul / feeling in the way the museum people explained things – sometimes they were talking about things they had worked with in their professional lives or about where they lived when they were young; When the museum professional was telling them about the Workers’ Apts., he used the things that were there in his talk, e.g. pulling out a chair and telling the students why there was a hole in it and why it had not been repaired</td>
<td>The museum professionals were good at figuring out who their listeners were and changing their way of talking to match their listeners’ level; He was bothered by the double-glazed windows in the Workers’ apt., because they were not authentic – the museum professional explained that it was necessary to replace the windows even though they had not been happy to do it;</td>
<td>The double-glazed windows looked odd in the Workers’ Apts.; The museum professionals were good at giving the students information about different historical issues, e.g. the oppression of women; The museum professional was good at talking with them – she remembered what he told them e.g. about the icy bedding and the cuspidors (shocking things)</td>
</tr>
<tr>
<td><strong>Understanding about learning</strong></td>
<td>What the students learned at the museum extended the knowledge they had from school</td>
<td>Seeing the double-glazed windows in an old apartment got him to think about what it would have looked like if the original windows were there - they made him think more</td>
<td>His group decided to tone down the physics part of their presentation because it was too difficult for their listeners</td>
<td>She discovered just how much she had learned about industry and the industrial revolution when she and her group were presenting their posters</td>
</tr>
</tbody>
</table>
Knowing what or about something

| The museum could not put aluminum tables and chairs in the Workers' Apts from 1920s because that technology was not available then | The new windows gave the wrong impression and not true history |

Learning facts and information

| They learned why the old windows had to be replaced (they did not fit the frames anymore because the glass “sank”) | She was shocked by learning that there had been ice on the residents’ bedding in the winter; The windows in the Workers’ Apts. had to be replaced because things became mildewed because of the damp; She learned about how unhygienic things were back then (the cuspidor); She had not known anything about the industrial revolution before this coursework or about the town |

Table 11.2 GLO 2 1d Neal, Richard, Sean, Suki

<table>
<thead>
<tr>
<th>Content</th>
<th>Neal</th>
<th>Richard</th>
<th>Sean</th>
<th>Suki</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication skills</td>
<td>His group had to consider how to communicate complicated knowledge in language everybody could understand – there were things they left out of their presentation that they would have been able to tell their classmates; His group learned about how to make a poster to communicate their topic; The students learned that it was better not to learn their speeches by heart because if they got messed up</td>
<td>Their Danish teacher taught them about how to make posters and make a speech; He learned from experience that he had to match what he said to his listeners; At one point, he and his group had thrown their manuscript away so they would not be so dependent on it when the presented their topic;</td>
<td>His group borrowed a model of a refinery from the museum to use in their presentation; He learned from speaking at Presentation Day: There were more listeners than they were used to and they had to take into consideration that they did not know a lot about the topics; In his group, they rehearsed the structure of their presentation, not the words themselves; He made sure to look</td>
<td>In her group, they decided to memorize everything but their presentation was actually better when they did not stick to the manuscript; She learned that the poster had to be made so that it was interesting to look at; She learned from one presentation</td>
</tr>
</tbody>
</table>
during their presentation it was hard to get back on track; They made sure that their presentation contained Danish concepts to impress their Danish teacher

They learned about typeface and –size at the museum

at the listeners to try to figure out how to angle his talk;
It was interesting to see the other groups’ presentations;
In his group they used short sentences like the curator had told them to do

to the next how to improve her performance

It was important for their parents to see that they were making progress in school and getting good results;
They did not work differently in their groups at the museum than they did at school;
One difference was that at the museum they could decide for themselves when they wanted to take a break from their work

They practiced a lot in their group so they could help each other if someone went blank during the presentation;
They were in their groups more than they would have been at school because they decided for themselves when they wanted to take a break;
They did not get to know each other better in their groups because they already knew each other very well

There was a spirit of solidarity in their group and they had a lot of fun,
The students’ sense of fellowship was strengthened at the museum because they were allowed to decide when they worked and when they took a break;
It was interesting to ride his bike to the museum instead of to school because he got to see a lot of new things on the way and talk to others from his class

She met up with other students from her class than she normally would on her bike on her way to the museum;
She talked with many different classmates than she would normally talk with;
She discovered whom she was good at working with

Making posters and communicating complicated subject-related matter to a lay audience

It was a positive experience to learn about this coursework at the museum and not just have normal classes at school;
It was interesting to be in a different setting;
He would have liked to have been given an

She had a very positive feeling about the museum

<table>
<thead>
<tr>
<th>Table 11.3 GLO 3 1d Neal, Richard, Sean, Suki</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content</strong></td>
</tr>
</tbody>
</table>
| Positive and negative attitudes in relation to an experience | It was interesting and different to do this coursework;
He remembered Presentation Day best and working with his group in the museum’s Lecture Hall, where it was very cozy | The teachers and the people at the museum were very helpful;
The museum professional used the room he was in to tell them | It was a positive experience to learn about this coursework at the museum and not just have normal classes at school;
It was interesting to be in a different setting;
He would have liked to have been given an | It was really fun to do this coursework and very important – it was a different way to do schoolwork and very interesting;
She had a very positive feeling about the museum |
### Appendix All Tables

<table>
<thead>
<tr>
<th>Motivation</th>
<th>Feelings</th>
<th>Perceptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>It was good not just to sit on a chair and be bored; When he was there, he could relax when he wanted and that made him feel freer and more motivated to work; He was motivated by the fact that his family was coming to hear his and his classmates’ presentation</td>
<td>He felt a sense of respect for the old things that he heard about from the people at the museum; The only time he was nervous during his presentation was when his parents were among his listeners</td>
<td>The museum knew a lot about history but his group’s topic was about how electricity</td>
</tr>
<tr>
<td>It was good that the students were in charge of finding information and preparing their presentation without having a teacher watching every move;</td>
<td>The students became more self-confident because they had to take responsibility for the how the success of their presentations and it was not the teachers who told them to get ready etc; After the presentations were over, it was cozy to have cake and soda</td>
<td>Doing coursework like this at a museum gave</td>
</tr>
<tr>
<td>Her attitude to the museum had not changed a lot but she thought the coursework was more fun because it took place at the museum</td>
<td>The students became more self-confident from having to present their topics to their parents; She was very shocked to learn about how unhygienic it was and how cold it was in “the old days” in the Workers’ apts. It was bothersome for her to get to the museum in the mornings – on the other hand, she got to know different people from class because she met them on her way to the museum</td>
<td>He felt that they were allowed to act more freely at the museum; He felt that they must be</td>
</tr>
<tr>
<td>about history; individual grade for their presentation, at least in Danish and history because it went well for him</td>
<td>The museum Auntie was really sweet; The museum professional was interested in the students – he asked us questions and wanted to know what we thought about the things he told us; He had butterflies in his stomach on Presentation Day because his parents were coming but deep down he knew that he was ready for it; The member of his group had given each other “high fives” after their presentation because their teachers had seen it and he and everything had gone well and he and his group were happy; His parents and many others had given them good feedback and he was relieved that everything had gone well</td>
<td>She and some of her other classmates talked about how they</td>
</tr>
</tbody>
</table>
works so they could not get a lot of help; One of the problems of school is that it is the teachers who decided everything – at the museum, things were freer and the students were not interrupted in the middle of their work – they could decide for themselves.

The students other possibilities to find information and objects and prepare their presentations; He was a little less formal in the way he talked with the people at the museum because they were not going to give him a grade; He was less worried about putting a question to the people at the museum because it would not affect his grade.

Well-mannered at the museum but they also felt freer just by being away from the norms of school; Being at the museum was a break in the routine, they were away from the classroom – that made it different and interesting. They should write about what they learned from this coursework and use it again in a new project for school because they learned so much from it; She felt that they were old enough to be responsible for their own learning, and this coursework made it possible to prove this; She had been given contradictory information from the museum educator and the director of the museum and finally decided to use the museum educator’s version an hour before their presentation; The students learned from each other and it was cozy to go from group to group and hear what they were doing; It made a difference for her and her group that there was a teacher in the group of listeners.

<table>
<thead>
<tr>
<th>Attitude towards an organization (e.g. the museum)</th>
<th>Before this coursework, he had a negative attitude towards the museum because he had been forced to go there with his grandparents when he was a child – now he saw the museum in a completely different way – he had actually asked his parents if</th>
<th>His attitude to the museum changed after this coursework and he thought it would be fun to do the same kind of thing at other museums,</th>
<th>They were in the historical setting, surrounded by it- that gave them a more emotional impression instead of just reading about it and looking at pictures in a book; He got a completely new impression of the museum compared to previous visits – he</th>
<th>Her attitude to the museum changed after this coursework; Perhaps her attitude to the museum had changed a bit; The people at the museum were very helpful; She thought that</th>
</tr>
</thead>
</table>
they wanted to visit the museum during the summer vacation; He thought that he had learned a lot more than he otherwise would have by working from doing this coursework; too; heard about their work there and talked with some of the employees about how they did research and how they produced their banners and brochures, etc. – that was a new way to see the museum which he did not know anything about before this coursework; The people at the museum were enormously helpful and they understood what the students needed; He had gained new insight into how the museum functioned and what the people there were like too; heard about their work there and talked with some of the employees about how they did research and how they produced their banners and brochures, etc. – that was a new way to see the museum which he did not know anything about before this coursework; The people at the museum were enormously helpful and they understood what the students needed; He had gained new insight into how the museum functioned and what the people there were like

<table>
<thead>
<tr>
<th>Table 11.4 GLO 4 1d Neal, Richard, Sean, Suki</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content</strong></td>
</tr>
<tr>
<td>Having fun</td>
</tr>
<tr>
<td>Exploration, experimentation and making</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 11.5 GLO 5 1d Neal, Richard, Sean, Suki</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content</strong></td>
</tr>
<tr>
<td>What people intend to do</td>
</tr>
</tbody>
</table>

The museum must have a hard time explaining the sophisticated physics of a steam engine to regular visitors.
| Actions (reported or observed) | He and his group decided to get dressed up for Presentation Day and make their table look nice, too [tablecloth and flowers in a vase]; It was important that their parents realized that they (the students) had actually learned something at school; He noticed that the teachers and the people from the museum talked together a lot and the teachers got a lot of help from the people at the museum and vice versa; He knew that he should be well- | Even though their physics teachers wanted them to present subject-relevant information, he and his group decided that they would have downplay physics because it was too complex to talk about on Presentation Day—that had been a little worrying as she would be assessing them | His group’s presentation was influenced by the setting and by the fact that they had borrowed objects from the museum to use in their presentation; He learned a lot from presenting the topic to the parents because they had to simplify their presentation; His parents had not seen him present something like this before — they thought the students did very well | Doing this coursework gave the students a chance to prove that they could be responsible for their own learning; She made an extra effort when the teacher was there during their presentation; She and her group had been very nervous when the history teacher listened to their presentation and were relieved when he said it went well |

| | school work at a museum gives one other opportunities; He might visit a museum during his vacation, maybe during the winter; He might visit the museum if it was relevant to his school work; He might visit a museum with his girlfriend if there was an exhibition they both thought was interesting | with his family in his spare time; He was very interested in archaeology but he would not take his girlfriend to Shoresby Museum – both of them would have to be interested in seeing the same exhibition; In his spare time he would rather go to MacDonald’s with his friends | | |
mannered but the atmosphere at the museum was freer – they could stay and leave as they wanted to as long as they got their work done

| Change in behavior | He and his group learned that it was good not to learn their speeches by heart; He and his group made an extra effort to use correct terminology when their Danish teacher came by | The change in the routine was important – he now knew that there was a place he could find information other than the internet and the library | Being at the museum did not change the way they presented their topic – it was fun to be there, though |

| Progression, e.g. towards further learning | The students learn about history through books | A fixed routine: Classroom lessons - teachers at the blackboard teaching, fixed breaks; One reads about history in a book or looks at some pictures; Teachers have to know a lot of different things within their subjects; It is a matter of principle that one is | One reads about history; The history teacher said that their presentation at the museum was not something that they should be given a grade for |

**Table 11.6 Learning School cmp. to museum 1d Neal, Richard, Sean, Suki**

<table>
<thead>
<tr>
<th>Neal</th>
<th>Richard</th>
<th>Sean</th>
<th>Suki</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>School learning</strong></td>
<td>They learned about the subjects; The museum was not very relevant in relation to his group’s topic about electricity; Teachers are enthusiastic, too, but rush ahead; Teachers are in authority and make all the decisions, about what to learn and when to have a break</td>
<td>The students learn about history through books</td>
<td>A fixed routine: Classroom lessons - teachers at the blackboard teaching, fixed breaks; One reads about history in a book or looks at some pictures; Teachers have to know a lot of different things within their subjects; It is a matter of principle that one is</td>
</tr>
</tbody>
</table>
Museum learning
The museum supplements what they learn in school at the museum; The museum people's way of telling about objects and exhibits awakened his emotions – there was something special about old things; Museum people are more enthusiastic and take their time to tell their story; He knew that he should be well-mannered but the atmosphere at the museum was freer – they could stay and leave as they wanted to as long as they got their work done; It was sometimes easier to ask the museum people for help instead of his teachers because the museum people would not give him a grade

They could walk around in the setting and exhibits they were going to use for their presentation; They were given a lot of help by different people at the museum; One learns about history by walking around in between the objects and one can look at and sometimes touch the things one is learning about – history is more concrete at the museum; The people at the museum sometimes have personal experience with what they are explaining which gives their narration more "soul"; Museum people do not give one grades; It was cozy; It is difficult for the museum to mediate complicated subject matter to their guests so they stick to the lowest common denominator

The museum's Auntie was very sweet and gave him an extra helping while she told him about what it was like to live in an apartment like that – from personal experience – she was a firsthand source of historical knowledge; History is personal; It was freer at the museum; One can walk around in the historical setting and sense what it must have been like to live or work there; One gets a more emotional impression of history instead of just reading about it in a book or looking at some pictures; The museum professionals are experts and speak warmly about their field of interest; Not everything there is authentic (e.g. the double-glazed windows in the Workers' apts.; Group work is freer; One is not bound by the norms of school

<table>
<thead>
<tr>
<th>Museum learning</th>
<th>not allowed just to sit still and relax</th>
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Table 11.7 Collaboration Adults Shoresby

<table>
<thead>
<tr>
<th>Dean (M)</th>
<th>Description of the collaboration</th>
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</thead>
<tbody>
<tr>
<td>It was good:</td>
<td></td>
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<tr>
<td>- to talk with the teacher and find out what the students had been working with in class</td>
<td></td>
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<tr>
<td>- To walk through the museum with the teacher and find the exhibits and objects that matched the abstract concepts they students had learned about</td>
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</tbody>
</table>
When the students were at the museum, he found objects and background material for them, told them about the exhibits, etc, alongside the teachers, who helped the students apply subject-related knowledge in their work – so the teachers and he shared the work load;

Because he and the teachers were university-educated, it did not take long for them to get on the same wavelength regarding the coursework although they had different approaches to it;

In the future, he would like to talk with the teachers about how to make the links between objects and abstract theory more explicit;

Danish was a subject in this coursework, so one of the products that the student had to make was a large poster with text, photos, graphs and in some cases technical drawings explaining a certain exhibit or object at the museum, and use the poster as their point of departure when they were explainers on Presentation Day – in the future it would be interesting to get the students to use the objects and exhibits themselves when they explaining what they had learned about their topic;

The teachers and he did not talk specifically about how to use the museum as a learning setting;

He felt he had learned from experiencing the teachers’ approach to the museum and how they taught the students

| Oliver (M) | He was the only representative from the museum at the first meeting with the (three) teachers;
He realized that the teachers had more or less decided what the coursework would be before their first meeting with him – this had surprised him because in previous projects with this partner school, the museum professionals and the teachers had discussed the content of the coursework before it was decided;
While he was showing the students the Workers’ Apartments, he found out that they were not planning on using other exhibits in the museum, and he had thought to himself that it would have been a good thing to have been informed of this beforehand; [later it turned out that the students did use many different exhibits]
The way this coursework was organized, there was no exchange of ideas – which had been one of the things that was good about other interface projects with the school;
Because there was no real initial collaboration, this coursework was carried out more like a traditional school visit, and the museum educator took over;
During the students’ visits, there was very little communication between the teachers and him about how things were going and what could be improved for future coursework;
The visit was like an ordinary school visit, and that was fine, but it did not give the museum staff any new insight and challenge them to act and think innovatively;
It would have been better if there had been a meeting right before the coursework started to reconfirm the week’s logistics (time tables etc.)
The reason he was surprised by the lack of collaboration was that he had expected it would be the same as in previous interface projects with the school – he had learned that in future projects, he would always start by asking if the coursework was already planned and organized;
The museum was not an active partner in the same way as in the other projects, and that was fine but compared to the previous projects, nothing new was learned or tried out;
From being a partnership before, he now saw the school and museum more as an enhanced cooperation;
During the coursework, the museum educator or he could have helped the students understand more about how to be an explainer at the museum, e.g. about using posters or steam engines as a medium of communication;
He and the museum educator were not involved in the planning of the Presentation Day, which he felt should have been dealt with in a different way, e.g. starting half an hour later so the parents would have time to get there after work; |
The teachers’ schedules meant that sometimes there were no teachers present while the students were there – the museum did not always know when the teachers were there, so it was difficult to know when someone from the museum should be available to help them; The next time they do this coursework, he and the teachers must agree on who does what when and how; He and his staff would never intervene in coursework that was already underway and that they had not participated in developing because that would unfair to the students; Developing completely new, ambitious coursework would be a way to regain some of the pioneering spirit of the first collaboration; Limited staff or funds sometimes make it impossible to undertake ambitious projects, but having the partnership makes it easier to put together projects quickly because the museum knows what to do – if time and funds are limited, the school and the museum can fall back on what they have done before – that is the most realistic view of the museum-school activities; He hoped that there will still be teachers who want to develop new projects with the museum because they know that the museum is a good partner to work with; The museum continues to invite the teachers who have undertaken interface projects to museum events and openings, etc. Working in the partnership had shown them that the school and the museum needed each other and that some of the teachers thought it was really exciting to talk with the museum staff and use the museum for their students; The collaboration needs to be formalized, e.g. by devising a checklist that starts with the receptionist answering the phone at the museum, so if a project turns up like this one, the museum can step in right from the start and be more active; The school also has resources the museum could use, e.g. a physics teacher could cast a critical eye on the museum’s signage in the Engine Room; There have been many interesting projects where the teachers and the students – gave the museum useful feedback about different things at the museum; There should have been an evaluation after this coursework.

Holly (G)  
She and the other teachers spent a long time preparing the coursework and had a meeting with Oliver at the museum early in the process and presented rather unfinished ideas about it although they did know what subjects would be involved and what the topic of the coursework would be; After the discussions at the first meeting, the teachers worked out a project description; She was very happy for the curator’s talk with the students about the signage and flyers at the museum, e.g. the language he used when he wrote them; It was really wonderful to experience the curator tell the students about the museum’s written communication because it aligned itself so well with what she taught them in class because then they could see how Danish is applied in real life; The curator’s talk was a scoop, something that was planned practically at the spur of the moment; The teachers considered – in collaboration with the museum – what the product of the coursework would be – Oliver had suggested that they did a parents’ day at the museum where the students could present their products; The teachers were very happy for the idea about the parents as upper secondary schools do not often have much contact with their students’ parents; The teachers did not evaluate the coursework afterwards, nor did they evaluate it with the museum – it was impossible to find a date when everybody could meet – and that was a mistake; She realized afterwards that the museum professionals had felt that they should have been the ones to welcome the parents and she was sorry about that – this was also something that should have been talked about at an evaluation meeting; The teachers’ approach to who should be in charge on Presentation Day and their planning
of it went wrong; She felt sure that there had been some communication about ideas for coursework like this much earlier (between Janine and Oliver) – the collaboration leading up this coursework was more based on the teachers presenting an outline at the first meeting and getting input from Oliver; There would be better collaboration if the teachers asked the museum staff to help the students understand how to explain the exhibits and objects directly and not on the basis of their posters; As a partner, the museum is very open and hospitable and the staff there knows how to make the students feel welcome; She had not reflected on the collaboration with the museum but considered it more in an instrumental way; Teachers are often rather closed and feel and act like experts

| Janine (G) | She and Oliver talked about doing coursework like this after a project the year before; The first meeting with the museum was to find out when the coursework could be carried out and a little bit about what the contents could be; After that the teachers decided the title question and topics and made a schedule for the coursework and e-mailed all this to the Oliver and the museum educator, who did not have any comments; During the visit, a volunteer from the museum told the students about the steam engine and the museum educator was there on and off to find things for the students; The museum was not really involved in the initial planning and working out the title question and topics – the teachers only had one meeting with the Oliver; During the previous coursework, Oliver had visited the students at school and told them about the museum so they got an understanding of it as an institution – this time the teachers did not organize it like that, so the students did not learn anything about the museum other than what they were told on their guided tour; Working with the museum gave her an insight into how museum staff work and how exhibits were built and objects collected, how their approach to explaining history and physics was different from hers and helped her think out of the box as far as her own teaching was concerned and she felt that no matter what she had come up with, the museum had invited her to go there and try it out |

<table>
<thead>
<tr>
<th>Shoresby</th>
<th><strong>Table 11.8 Differences - formal and informal learning environments Adults</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Formal</strong></td>
<td><strong>Informal</strong></td>
</tr>
<tr>
<td><strong>Dean (M)</strong></td>
<td><strong>Dean (M)</strong></td>
</tr>
<tr>
<td>There is a definite output that the students work towards; The students’ presentations were structured like a history book, chronologically which reflects how they are taught in school; There is more focus on general history; There is one teachers per subject</td>
<td>History is given a “soul” and made personal because its point of departure is objects and the stories associated with them; The students can meet many different people who tell them about the objects or about the museum → different perspectives – this can cause some confusion if they are told different stories; Abstract theory is made concrete</td>
</tr>
</tbody>
</table>
Students learn to become good citizens; Exams and grades characterize formal education  

**Holly (G)**

The students must learn about subjects because of the curriculum and because there will be an exam; The students are in school for a long time and can be expected to have the same basic knowledge; The curriculum is set up to develop over a long period of time

The museum has to explain about history and about the museum to people with very different backgrounds and only has a very short time to do it

<table>
<thead>
<tr>
<th>Table 11.9 GLO 1 Adults Shoresby</th>
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</table>
| **GLO 1 Knowledge and understanding**

<table>
<thead>
<tr>
<th><strong>Dean (M)</strong></th>
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<tbody>
<tr>
<td>Some of the students had trouble learning the chronology of the Workers’ Apartments (1880 and 1920), which surprised him; The student learned about:  - The Workers Apartments and how they showed the improvement of living conditions over time  - The Workshop exhibit which tells the story of the division of labor</td>
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<tr>
<th><strong>Oliver (M)</strong></th>
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<tbody>
<tr>
<td>The students:  - were able to connect their book learning with what they experienced at the museum;  - Understood that the word “old” can be split up and that an abstract concept like Industrialism can become concrete;  - Learned that one’s academic point of departure determines what one makes a point of telling and that knowledge is subjective;  - Got a sense of history from being at the museum</td>
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<table>
<thead>
<tr>
<th><strong>Holly (G)</strong></th>
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</thead>
<tbody>
<tr>
<td>The students learned about the steam engine</td>
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<thead>
<tr>
<th><strong>Janine (G)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The students learned:  - about their own topic, e.g. heating and the steam engine, but they did not gain a deep understanding of all the topics  - Learned about the significance of the Industrial Revolution;  - That humans always endeavor to optimize and improve technology;  - About how groundbreaking inventions do not just happen overnight</td>
</tr>
</tbody>
</table>

The students would have learned more about the steam engine if they had used it instead of their posters to talk about on Presentation Day – they would have to understand it better to be able to point to its different parts and explain what they do; Physics became more real for them; The students learned more about physics and living conditions from seeing the steam

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18 Knowing what or about something; Learning facts or information; Making sense of something; Deepening understanding; How museums, libraries and archives operate; Making links and relationships between things [http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/](http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/) (Accessed Jan. 22, 2104)
engine, the Machine Shop and the Workers’ Apartments and not just hearing about them from her;

The students realized that the teachers and the museum staff and volunteers had different kinds of knowledge.

Table 11.10 GLO 2 Adults Shoresby

<table>
<thead>
<tr>
<th>GLO 2 Skills</th>
<th>Dean (M)</th>
<th>Oliver (M)</th>
<th>Holly (G)</th>
<th>Janine (G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Having to produce the poster kept the students on track as far as the subject-related work was concerned.</td>
<td>Some of the students understood the connection between the exhibits – how understanding one exhibit helps understand the others; Many of the students relied on their posters instead of using the objects or exhibit as a basis for their presentation; It was very motivating for the students to have to prepare a presentation for their parents – they felt obliged to do well; The students had to consider how to present their topics in language that everyone could understand; The Presentation Day was also a social event where the students “performed” for their own and their classmates’ parents and teachers; The students got practice in talking about subject-related issues with many different adults at the museum; The students understood that the museum staff talk about history in a different way than their teachers do; The parents might not have learned much about steam engines – the students did explain about their topics but the social aspect of the event was more important for the parents;</td>
<td>The students learned from talking with many different people at the museum and to see through some of the explanations; The students discovered that the museum provided a different learning environment that was more open than school and that it was different to work there and to think about their topics; The students learned how they could use the museum to find knowledge they could use; Some of the students were nervous about presenting their knowledge in a new way – they stuck to the way they would normally do a presentation at school; The students discovered that the museum professionals explain history in a different way than their teachers;</td>
<td>The students learned about the museum’s written communication and that a lot of thought goes into word choice, sentence length and structure, etc. – this was good because they understood how what they learn in Danish in school is applied in authentic practice; The students had to present their topic four times during Presentation Day and experienced how they became better and better at it; She had noticed that if one of the students became unsure of himself during the presentation, the other students stepped in and took over for him – they were very keen to do well; This class was a science class and it was a scoop for Danish that they saw how important language is in communication and dissemination;</td>
<td>The students: - took the Presentation Day very seriously and wanted their audiences to understand their topics – however, they behaved differently when there was</td>
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</tbody>
</table>

[19] Knowing how to do something; Being able to do new things; Intellectual skills; Information management skills; Social skills; Communication skills; Physical skills

teacher in the group of listeners
- were asked to perform in new surroundings and it would probably require more
time and preparation for them to use them more in their presentation — they
relied on what they already knew would work;
- learned a lot from working with their topics at the museum, where they got
different perspectives on how to understand and explain them;
- had not been prepared to use the museum — they were just a group of 15 and 16-
year-olds that were thrown into the museum and told to use it

Table 11.11 GLO 3 Adults Shoresby

| GLO 3 Attitudes and values<sup>20</sup> | Dean (M) | | Oliver (M) | Holly (G) |
|----------------------------------------|----------|------------------------------------------|------------------------------------------|
| It was fun for them to get behind the scenes of the museum, e.g. he took them into a storage room where they found an old model of a gas retort they could use — they got a better understanding of what a museum is | The informality of the situation made it easy to talk about subject-related things in a relaxed way; The students: - were very impressed by talking with one of the museum Aunties [who cook and serve samples of historical dishes in the kitchen in one of the Workers’ Apartments twice a week] because she had lived in an apartment like that — they got a very personal insight into living conditions etc. of that time - got a sense of the museum as an arena for social activity during the Presentation Day | The students got a sense of what a museum is and that there are many different types of people who work there The students’ attitude to the museum might have been changed — he thought that they left the museum with the feeling that it was a friendly place and that it was different to work there than at school; The students discovered that museums function under different conditions, e.g. they cannot afford to heat up all the rooms in this museum; The students were flexible and moved around so their computers could access the museum’s internet | The students: - were especially motivated during the coursework and made an extra effort because they were preparing an oral presentation for an authentic audience (their parents) - became more involved because they visited a workplace outside of school and met professional people who made them feel at home She felt that enthusiasm and motivation were an extremely important factor in the students’ learning; The students noticed that she and Janine enjoyed each other’s company and helped each other organize the coursework and the Presentation Day; She said that having a good experience and learning are very closely bound together; She felt sure that some of the students had gone away with a more positive attitude about the museum than they had had; |

<sup>20</sup> Feelings; Perceptions; Opinions about ourselves (e.g. self esteem); Opinions or attitudes towards other people; Increased capacity for tolerance; Empathy; Increased motivation; Attitudes towards an organization; Positive and negative attitudes in relation to an experience

She said that some of the students had had boring experiences at the museum during elementary school but that they liked having the museum as their workplace for this coursework.

Janine (G)

The students were not told exactly what they would be doing at the museum before they got there, so they were very curious; At first the students felt a little bit shy at the thought of inviting their parents to the museum and presenting their products to them — after they got used to the idea, they went at it hammer and tongs; Right before the parents arrived, some of the students were pretty nervous; She overheard one student say that the next group they were going to do their presentation for was a good group because there were not any teachers in it; Most of the students were hesitant about using the museum’s objects — in order to get them to do that, they must be told that they have to use them in their products; This class was not so excited about working at the museum as other classes had been [earlier intracourse coursework with the museum] — they said that they could just as well do the coursework at school — they were not as enthusiastic about being here.

Table 11.12 GLO 4 Adults Shoresby

<table>
<thead>
<tr>
<th>GLO 4 Enjoyment, inspiration, creativity^21</th>
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<tbody>
<tr>
<td><strong>Dean (M)</strong></td>
</tr>
<tr>
<td>The quicker the students could finish their work, the quicker they could fool around and have fun – the social experience was important too – the museum’s lecture hall was theirs to use while they were at the museum; They worked hard at making a good presentation for their parents</td>
</tr>
<tr>
<td><strong>Oliver (M)</strong></td>
</tr>
<tr>
<td>Some of the students were inspired by having the museum as a source of knowledge and resources, e.g. a group that borrowed lithographic printing stones used for printing labels</td>
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<tr>
<td><strong>Holly (G)</strong></td>
</tr>
<tr>
<td>The students laughed a lot and there was a good atmosphere; The museum provided an inspiring framework – e.g. one group was very enthusiastic and brought old toy steam engines with them to use in their presentation – and even picked flowers for their presentation – they would not have done that at school; Enthusiasm and motivation are very conducive to learning – the students will surely remember this experience when they are asked about it in their third year; The students enjoyed see Holly and Janine work together; The students’ enthusiasm and the whole experience - she was very sure that the students had learned a lot, but it was difficult to measure just exactly what they had learned</td>
</tr>
<tr>
<td><strong>Janine (G)</strong></td>
</tr>
<tr>
<td>The students explore the museum to find what they needed for their presentations</td>
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</tbody>
</table>

Table 11.13 GLO 5 Adults Shoresby

<table>
<thead>
<tr>
<th>GLO 5 Activity, behavior and progression^22</th>
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</thead>
<tbody>
<tr>
<td><strong>Dean (M)</strong></td>
</tr>
<tr>
<td>Having the parents come to the museum was a good way to get new guests that would not normally visit the museum, e.g. people who do not get off work until after 4 p.m., when the museum closes; There were a couple of students of foreign extraction and their parents came which was</td>
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</tbody>
</table>

^21 Having fun; Being surprised; Innovative thoughts; Creativity; Exploration, experimentation and making; Being inspired http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/ (Accessed Jan. 23, 2014)

^22 What people do; What people intend to do; What people have done; Reported or observed actions; A change in the way people manage their lives http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/ (Accessed Jan. 23, 2014)
The students found out that they could use the museum to find information and ask for help, but he did not feel sure that the experience had caused in radical change in their outlook, etc.

She noticed one of the students whose oral presentation was very bad the first time and his group mates stepped in and helped him – that was a good experience.

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<thead>
<tr>
<th>Name</th>
<th>Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oliver (M)</td>
<td>The students found out that they could use the museum to find information and ask for help, but he did not feel sure that the experience had caused in radical change in their outlook, etc.</td>
</tr>
<tr>
<td>Holly (G)</td>
<td>She noticed one of the students whose oral presentation was very bad the first time and his group mates stepped in and helped him – that was a good experience.</td>
</tr>
</tbody>
</table>

Janine (G) |
## Cranwell and Shoresby Museum

### Table 12.1 GLO 1 3oc Amy, Kiley, Maxwell, Rosemary

<table>
<thead>
<tr>
<th>Content</th>
<th>Amy</th>
<th>Kiley</th>
<th>Maxwell</th>
<th>Rosemary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding connections between activities</td>
<td></td>
<td></td>
<td>He asked his parents about their phone in the 1990s and he found their old phones and talked with his parents about them and that was really fun – because normally he did not talk much with his parents about school</td>
<td></td>
</tr>
<tr>
<td>Subject-related learning and relevancy</td>
<td></td>
<td></td>
<td>The coursework was a good way to introduce innovation</td>
<td></td>
</tr>
<tr>
<td>Learning about the museum</td>
<td></td>
<td></td>
<td>It was “cool” that the museum was alive, with volunteers in the smithy and in the Workers’ Apts.</td>
<td>She and her group asked a museum staff member in the Wardrobe exhibit about what clothes were typical of the group’s historical period</td>
</tr>
<tr>
<td>Understanding about learning</td>
<td>One uses other strategies at the museum than at school, where one only learns about theory</td>
<td>She could identify herself with what she saw in the Workers’ Apts.; It was a learning experience because she and her group were in the historical setting of “their” telephone and were wearing costumes from that historical period</td>
<td>The students explored the museum’s exhibits to find suitable motifs and settings for their videos which was a different from writing papers in school</td>
<td>The coursework was a good way to introduce the students to a new topic in innovation</td>
</tr>
<tr>
<td>Learning facts and information</td>
<td>She found out that there were three museums in the town; She learned about how Danish was spoken during “their” historical period</td>
<td>She learned about the development of the telephone</td>
<td></td>
<td>She was a newcomer in town so she was happy to learn about the town and its industry</td>
</tr>
</tbody>
</table>
### Table 12.2 GLO 2 3oc Amy, Kiley, Maxwell, Rosemary

<table>
<thead>
<tr>
<th>Content</th>
<th>Amy</th>
<th>Kiley</th>
<th>Maxwell</th>
<th>Rosemary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication skills</td>
<td></td>
<td></td>
<td>In his group there was some disagreement about how to make the video which they had to discuss and resolve before they could move forward</td>
<td></td>
</tr>
<tr>
<td>Social skills</td>
<td></td>
<td></td>
<td>He learned a lot about his classmates from seeing them act in their roles at the museum instead of just seeing them in school</td>
<td>She did not feel that she learned anything new about her classmates – she was used to working with the others in her group</td>
</tr>
<tr>
<td>Being able to do new things</td>
<td>Even though she had tried making a video in other classes, she still felt it was a challenge because it was a complicated process</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information management skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 12.3 GLO 3 3oc Amy, Kiley, Maxwell, Rosemary

<table>
<thead>
<tr>
<th>Content</th>
<th>Amy</th>
<th>Kiley</th>
<th>Maxwell</th>
<th>Rosemary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive and negative attitudes in relation to an experience</td>
<td>She thought it was a very good work process and a good learning experience because they were working in a different setting; It was a learning experience to be at the museum in a historical setting and wearing costumes typical of a historical time</td>
<td></td>
<td>It was a very good experience that the students were given free rein – they were allowed to do what they wanted and figure out how to create what they wanted</td>
<td></td>
</tr>
<tr>
<td>Motivation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feelings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceptions</td>
<td>She discovered new</td>
<td>He learned a lot</td>
<td></td>
<td>She learned in a</td>
</tr>
</tbody>
</table>
Appendix All Tables

<table>
<thead>
<tr>
<th>Attitude towards an organization (e.g. the museum)</th>
<th>Amy</th>
<th>Kiley</th>
<th>Maxwell</th>
<th>Rosemary</th>
</tr>
</thead>
<tbody>
<tr>
<td>It depends on what the given museum – if it is a place where one just walks around and looks at old stuff in display cases, that is boring – but if there are activities, that is different</td>
<td>It was interesting to be at the Shoresby Museum – he had visited a lot of museums before and never felt that they were very relevant for him but because they had been allowed to walk around on their own and investigate exhibits etc, and because the Shoresby Museum was more alive, his attitude changed</td>
<td>This coursework changed her attitude – she normally associated museums with old, boring things, but industry and telephones at the Shoresby Museum were interesting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 12.4 GLO 4 3oc Amy, Kiley, Maxwell, Rosemary

<table>
<thead>
<tr>
<th>Content</th>
<th>Amy</th>
<th>Kiley</th>
<th>Maxwell</th>
<th>Rosemary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Having fun</td>
<td>It was fun to do the coursework</td>
<td>It was fun to talk with his parents about the family’s telephones from the 1990s</td>
<td>It was fun to learn in a different way</td>
<td></td>
</tr>
<tr>
<td>Creativity</td>
<td>She discovered that she learned better when the assignment was not just to “solve the following problems” – she learned better by working creatively, like making the videos</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exploration, experimentation and making</td>
<td>The students explored the museum’s exhibits to find suitable motifs and settings for their videos</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Being inspired</td>
<td>It was good to be at the museum and work in a different way; It was a break from the normal routine</td>
<td>It was really interesting and it was great that Christian was there [at the museum] to help them</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 12.5 GLO 5 3oc Amy, Kiley, Maxwell, Rosemary

<table>
<thead>
<tr>
<th>Content</th>
<th>Amy</th>
<th>Kiley</th>
<th>Maxwell</th>
<th>Rosemary</th>
</tr>
</thead>
<tbody>
<tr>
<td>What people intend to do</td>
<td>She might visit if it was to show it to</td>
<td>When she was older and had</td>
<td>If his grandparents from Western</td>
<td>She would like to invite her family</td>
</tr>
</tbody>
</table>
somebody – she would not visit it on her own

children of her own, she would take them to see the museum but she would not visit it again on her own

Jutland came to visit, he would take them to the museum to show them what the town Shoresby was like before and now to the museum - her little sister was in their video so her parents were quite interested in the coursework

**Actions (reported or observed)**

She noticed that there were some classmates who were good at this coursework and more active compared to when they were in school

**Change in behavior**

She thinks that the students in her class have become better at solving small conflicts before they grow too big

His behavior towards some of the others in his group changed as a result of this coursework

**Progression, e.g. towards further learning**

Table 12.6 Learning School cmp. to museum 3oc Amy, Kiley, Maxwell, Rosemary

<table>
<thead>
<tr>
<th>School learning</th>
<th>Kiley</th>
<th>Maxwell</th>
<th>Rosemary</th>
</tr>
</thead>
<tbody>
<tr>
<td>At school, one learns about theory and takes notes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Museum learning**

Museum people are experts; She learned a lot more at the museum than at school because of the historical setting and the “historical” costumes; She and her group were more focused during the coursework because it was not just routine lessons

Table 12.7 GLO 1 3oe Alice, Christa, John, Peter

<table>
<thead>
<tr>
<th>Content</th>
<th>Alice</th>
<th>Christa</th>
<th>John</th>
<th>Peter</th>
</tr>
</thead>
</table>
### Appendix All Tables

<table>
<thead>
<tr>
<th>Understanding connections between activities</th>
<th>Subject-related learning and relevancy</th>
<th>Learning about the museum</th>
<th>Knowing what or about something</th>
<th>Learning facts and information</th>
</tr>
</thead>
<tbody>
<tr>
<td>She could not use concepts from the coursework subject Innovation; The coursework was more relevant in relation to Contemporary History</td>
<td>She could not really use the coursework subject Innovation; She already knew about the historical development that the museum shows because she had been there many times before; She had been there the year before with her Design class to see the Workers’ Apts.</td>
<td>One gets more of a cozy chat at the museum</td>
<td>She saw some old magazines on display in the Workers’ Apt. and realized that they were like the magazines she could buy today</td>
<td>Christian’s lecture about the development of the telephone and its importance was</td>
</tr>
<tr>
<td>It was difficult to apply the concepts from the coursework subject Innovation</td>
<td>He did not learn much about Innovation; He learned about the historical periods and about the development [of the telephone?]; He did not really learn anything – he thought he would have if the coursework had been clear about how to incorporate the subject Innovation</td>
<td></td>
<td></td>
<td>He learned a lot about the development of the telephone; He learned new things about the town, e.g. about a</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Table 12.8 GLO 2 3oe Alice, Christa, John, Peter

<table>
<thead>
<tr>
<th>Content</th>
<th>Alice</th>
<th>Christa</th>
<th>John</th>
<th>Peter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication skills</td>
<td>He discovered that he could ask the people at the museum for help</td>
<td>He discovered some unfortunate traits in one of the boys in his group – he did not want to work with him again</td>
<td>They asked the people at the museum for help to find information about “their” telephone (1990s)</td>
<td>They did not change their behavior towards each other</td>
</tr>
<tr>
<td>Social skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Being able to do new things</td>
<td>She and Alice were not very technically minded so they had trouble editing their video – it was very difficult but she finally learned how to do it</td>
<td>The students were not given any information about how to edit videos, which was easy to see in some of the final products</td>
<td>He got to brush up on how to use Windows Moviemaker, which he had not used since the 6th grade</td>
<td></td>
</tr>
<tr>
<td>Information management skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 12.9 GLO 3 3oe Alice, Christa, John, Peter

<table>
<thead>
<tr>
<th>Content</th>
<th>Alice</th>
<th>Christa</th>
<th>John</th>
<th>Peter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive and negative attitudes in relation to an experience</td>
<td>She and Christa could have done their assignment about the telephone of the future without even using the museum</td>
<td>She found out that she could use the museum for certain assignments</td>
<td>One of the people at the museum was very helpful and told them all about the telephone they used in their video</td>
<td>It was a pity that the students had not been given some ideas about how to use Innovation in the coursework</td>
</tr>
<tr>
<td>Motivation</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feelings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix All Tables

<table>
<thead>
<tr>
<th>Perceptions</th>
<th>Freedom with responsibility was a good idea in this coursework</th>
<th>She and Alice took the coursework seriously instead of seeing it as fun;</th>
<th>Freedom with responsibility is how he characterized the coursework at the museum; The Museum Street display gave him a sense of what it was like in the old days; He got a broader perspective on and more insight into history than from just reading about it in a book</th>
<th>The students were allowed to decide for themselves when they wanted to work which made everything a little easier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude towards an organization (e.g. the museum)</td>
<td>The museum provides a &quot;physical&quot;, concrete experience; She mainly considered the museum as a place to have fun</td>
<td>Her attitude to the museum had grown more relaxed – earlier she had been forced to visit the museum – in this coursework it was up to them to decide how much they wanted to use the museum; The museum is more for a cozy chat</td>
<td>The museum people could help him every time he asked – instead of having to look through a lot of material, someone at the museum helped him find what he needed;</td>
<td>Museums are &quot;old school&quot; – one can find everything online and make illustrations digitally; At the museum there is someone to help you find what you need; that is not the case online</td>
</tr>
</tbody>
</table>

Table 12.10 GLO 4 3oe Alice, Christa, John, Peter

<table>
<thead>
<tr>
<th>Content</th>
<th>Alice</th>
<th>Christa</th>
<th>John</th>
<th>Peter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Having fun</td>
<td>She felt guilty because she left all the editing to Christa as she was not good with technical stuff; She thought that the students had seemed happy about the coursework</td>
<td>It was very frustrating to edit the video; Even though it was frustrating to do the work, she and Alice had fun once in awhile when they suddenly found themselves in a comical situation;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creativity</td>
<td>Christa’s and her topic was the telephone of the future so the museum was not much help – they</td>
<td>She and Alice had to figure out how to present their topic and they could not really use the museum; She did not want to be in the video so she and Alice came</td>
<td>It was fun to struggle with the film editing and to work with putting the film together in a</td>
<td></td>
</tr>
</tbody>
</table>
used a cartoon figure in their video up with the idea of a cartoon figure; She and Alice made the cartoon figure nostalgic so they could use pictures of the old telephones in their video creative way

| Exploration, experimentation and making | She and Christa did not talk to any of the people at the museum | They looked for changes in telephone design and found drawings they could put in their video; They studied the museum’s exhibit of telephones to see how they looked and had changed over the years; She and Alice tried out some ideas until they found one they thought would work | It was fun to struggle with the film editing and to work with putting the film together in a creative way | Neither he nor John were actors or film editors so they had to call on their own innovative abilities to do the work |

| Being inspired | The students’ assignment kept being changed – the coursework was very vague and rambling – they had figure out a lot of things by themselves; She would have preferred a traditional classroom lesson | The coursework was not explained very well – if it had been, he and the others would have produced better results – they did not know until right towards the end of the coursework that they needed to include something from their subject Innovation |

Table 12.1 GLO 5 3oe Alice, Christa, John, Peter

<table>
<thead>
<tr>
<th>Content</th>
<th>Alice</th>
<th>Christa</th>
<th>John</th>
<th>Peter</th>
</tr>
</thead>
<tbody>
<tr>
<td>What people intend to do</td>
<td>She would not go to the museum for information</td>
<td>She would use the museum in relation to schoolwork but probably not as a leisure time activity unless the visit was e.g. a family outing</td>
<td></td>
<td>He might use the museum for schoolwork but would probably not visit it in his spare time;</td>
</tr>
</tbody>
</table>

| Actions (reported or observed) | Some of the other students did not take the coursework very seriously – their videos did not have much subject-related content but it was easy to see that they had had fun making |  |  |  |
The students who were entrepreneurial or who thought it was fun to dress up and act really got something out of this coursework.

<table>
<thead>
<tr>
<th>Change in behavior</th>
<th>Progression, e.g. towards further learning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>She did not think she would use the museum for school work</td>
</tr>
</tbody>
</table>

### Table 12.12 Learning School cmp. to museum 3oe Alice, Christa, John, Peter

<table>
<thead>
<tr>
<th></th>
<th>Alice</th>
<th>Christa</th>
<th>John</th>
<th>Peter</th>
</tr>
</thead>
<tbody>
<tr>
<td>School learning</td>
<td>School learning is good for someone who likes to do assignments and listen to the teachers</td>
<td>One reads about history</td>
<td>One is in the classroom and is told what to do and when to do it; There is a teacher who keeps an eye on the students</td>
<td></td>
</tr>
<tr>
<td>Museum learning</td>
<td>The coursework at the museum was good for students who want to get out and do something and make something of their own</td>
<td>He could get a lot of help from the people at the museum – they helped him find information – they were like experts and advisors; The Museum Street display gave him a sense of what it was like in the old days; He got a broader perspective on and more insight into history than from just reading about it in a book;</td>
<td>The students could decide for themselves about when they worked and what they did – it was freer</td>
<td></td>
</tr>
</tbody>
</table>

### Table 12.13 Collaboration Adults Cranwell

<table>
<thead>
<tr>
<th></th>
<th>Description of the collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Christian (M)</td>
<td>The collaboration was good – he and the teachers worked out, in detail, how the students could use the museum; He let it be up to the teachers to evaluate the quality of the students’ products as they were the ones who expected – and required of – the students to apply the theoretical concepts;</td>
</tr>
</tbody>
</table>
If the teachers were satisfied with the students’ subject-related output, so was he;
He had been worried that the teachers were acting under orders from their director, but
the ones he worked with in this coursework were very enthusiastic and could immediately
see lots of potential in using the museum;
He and Liz had planned most of the coursework first and then, rather late in the planning
stage, the three other teachers joined the collaboration;
Liz talked about the coursework that she and Christian were developing at school and
three teachers decided to do it as well;
Originally, Christian and Liz had planned for this coursework to be a “test-cycle” with only
her class involved;
He felt that a collaboration like this helps the teachers as well because they get new ideas
about how they can use history and how they can use the museum;
The lines between the museum and the school are now open which means that future
collaboration will not be so time-consuming;
Limited resources might make it hard to keep the collaboration alive;
Coursework like this is more complex than traditional guided tours and it involves a lot
more people at the museum – these activities can be difficult to coordinate and how does
one get everyone in the museum to feel that they are priority activities?
The collaboration with the school is unproblematic – it is the collaboration within the
museum’s organization that can be a problem, e.g. when 150 students come to the
museum in the space of a few days and need to borrow costumes and other material and
take pictures, etc. – people not responsible for the project do not necessarily feel more
loyal to it than to other projects so generally opt to support the projects with the least
turmoil and bother.

| Liz (G)                      | She was used to working in many different partnerships, so she did not feel that she had
|                             | learned anything from this coursework collaboration;
|                             | She had had positive expectations about the collaboration and these expectations had
|                             | been fulfilled;
|                             | She described the collaboration as good because the people she worked with were
|                             | intelligent, thoughtful and normal people who were interested in developing an idea – if
|                             | they had been tiresome, she would not consider doing it again;
|                             | It was an innovative collaboration where they tried something new, using the museum
|                             | actively instead of just visiting it passively;
|                             | She thought it would be good to make a tradition out of this kind of coursework, offering it
to several generations of students to iron out all the bumps;
|                             | She said that this was not a “logical partnership” – it would be more logical for her school
to be in a partnership with a business;
|                             | The partnership’s success depends on the enthusiasm of individuals in each organization;
|                             | She and Christian came up with the idea for the coursework and then she told her
|                             | colleagues about it – they all evaluated the coursework at talked about how to improve it
|                             | for the following year |

| Patty (G)                   | The museum was flexible and open;
|                             | It was easy to collaborate with the museum and the logistics of the coursework were
|                             | mainly dealt with in e-mails;
|                             | She was happy to have participated in one of the planning meetings – it was difficult to
|                             | feel ownership about a project one learned about in an e-mail;
|                             | The collaboration was easy and informal and it was nice to be at the museum;
|                             | She sensed that the museum were tuned into young people;
|                             | In the school’s objects clause, it is stipulated that the teachers must collaborate with
|                             | outside partners;
|                             | The collaboration is very dependent on the interest and enthusiasm of certain teachers
|                             | and if there is not enough time to become involved, the teacher(s) would not have a sense
Table 12.14 Differences - formal and informal learning environments Adults Cranwell

<table>
<thead>
<tr>
<th>Formal</th>
<th>Informal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Christian (M)</strong></td>
<td>The teacher pours on knowledge and information and hopes that some of it will stick; In a classroom, the students always just sit and listen</td>
</tr>
<tr>
<td><strong>Liz (G)</strong></td>
<td>The students need more guidance and control and for the coursework to become less informal and more formal; The school and the museum are completely different learning environments – at school they are parked on chairs</td>
</tr>
<tr>
<td><strong>Patty (G)</strong></td>
<td>Classrooms, blackboards, books; The school and the museum both want to culture and educate young people – the museum wants to give people a general education and she wants the students to use subject-related terminology</td>
</tr>
</tbody>
</table>

Table 12.15 GLO 1 Adults Cranwell

<table>
<thead>
<tr>
<th>GLO 1 Knowledge and understanding&lt;sup&gt;23&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Christian (G)</strong></td>
</tr>
</tbody>
</table>

<sup>23</sup> Knowing what or about something; Learning facts or information; Making sense of something; Deepening understanding; How museums, libraries and archives operate; Making links and relationships between things [http://www.inspiringlearningforall.gov.uk/tooltemplates/genericlearning/](http://www.inspiringlearningforall.gov.uk/tooltemplates/genericlearning/) (Accessed Jan. 22, 2104)
They learn about the work place, the machine room and work stations and the conveyor belt by seeing and hearing it when it is turned on; He wanted the students to “move into the apartments and feel at home” as a way of understanding what it was like to live during a given historical period; Their videos were unsatisfactory regarding the incorporation of the subject-related terminology (innovation) – the videos are not very serious as far as theory is concerned; The students felt that they did not learn enough about their subject Innovation; He was not sure they had learned very much about Innovation but very sure that they had learned something about History; Perhaps they themselves have worked in an innovative way when they produced these videos

<table>
<thead>
<tr>
<th>Liz (G)</th>
<th>The students did not learn very much about Innovation and did not use it in their videos; She was not satisfied with the students’ subject-related learning – this was due to the students themselves, not the coursework; The students experienced the museum – their lessons were varied and there was more for boys than there is normally, which is important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patty (G)</td>
<td>She hoped the students had gained something personal from the coursework, about the museum and about history; They learned about music of the historical period they were working with and about what people wore; Not all the students understood how to include subject-related theory in their videos but the learned other important things about history; The students’ reports (written assignment) revealed that they could apply subject-related theory; Her goal for the students was that they understood the development of telephones and of their functions</td>
</tr>
</tbody>
</table>

Table 12.16 GLO 2 Adults Cranwell

<table>
<thead>
<tr>
<th>GLO 2 Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Christian (M)</td>
</tr>
<tr>
<td>Liz (G)</td>
</tr>
<tr>
<td>Patty</td>
</tr>
</tbody>
</table>

24 Knowing how to do something; Being able to do new things; Intellectual skills; Information management skills; Social skills; Communication skills; Physical skills
tried before; Innovation is a very diffuse concept and she was not sure that the students had really understood it; The students got to know each other better.

Table 12.17 GLO 3 Adults Cranwell

<table>
<thead>
<tr>
<th>GLO 3 Attitudes and values²⁵</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Christian (M)</strong></td>
</tr>
<tr>
<td><strong>Liz (G)</strong></td>
</tr>
<tr>
<td><strong>Patty (G)</strong></td>
</tr>
</tbody>
</table>

Table 12.18 GLO 4 Adults Cranwell

<table>
<thead>
<tr>
<th>GLO 4 Enjoyment, inspiration, creativity²⁶</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Christian (M)</strong></td>
</tr>
<tr>
<td><strong>Liz (G)</strong></td>
</tr>
</tbody>
</table>

²⁵ Feelings; Perceptions; Opinions about ourselves (e.g. self esteem); Opinions or attitudes towards other people; Increased capacity for tolerance; Empathy; Increased motivation; Attitudes towards an organization; Positive and negative attitudes in relation to an experience http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/ (Accessed Jan. 23, 2014)

²⁶ Having fun; Being surprised; Innovative thoughts; Creativity; Exploration, experimentation and making; Being inspired http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/ (Accessed Jan. 23, 2014)
The boys were creative and used their imaginations right from the first minute and they had all sorts of ideas about what they could do and make and explored the museum to find things they could use; The boys saw opportunities, the girls saw limitations; The boys jumped at the opportunity to go to the museum and discover new things and would have gotten more out if they had been given a few more guidelines; The students could move around as much as they wanted instead of sitting on chairs; Students are geared to have fun;

| Patty | The students had to acquaint themselves with the context in order to make their videos – in a way the students BECAME the context |

| Table 12.19 GLO 5 Adults Cranwell |

<table>
<thead>
<tr>
<th><strong>GLO 5 Activity, behavior and progression</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Christian (M)</strong></td>
</tr>
<tr>
<td><strong>Liz (G)</strong></td>
</tr>
<tr>
<td><strong>Patty (G)</strong></td>
</tr>
</tbody>
</table>

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27 What people do; What people intend to do; What people have done; Reported or observed actions; A change in the way people manage their lives [http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/](http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/) (Accessed Jan. 23, 2014)
## Westby Gymnasium and Westby Museum

Table 13.1 GLO 1 3x Jerry, Linda, Matthew, Naomi

<table>
<thead>
<tr>
<th>Content</th>
<th>Jerry</th>
<th>Linda</th>
<th>Matthew</th>
<th>Naomi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding connections between activities</td>
<td>He could use what he learned in Danish about speaking publicly at the Science Fair</td>
<td></td>
<td>At the Science Fair, he talked about the archaeology of the coursework because telling the 7th graders about the chemical process of analyzing the soil samples would be too complicated for them; The students could use their lab experience from this coursework in connection with other Study Program Project</td>
<td></td>
</tr>
<tr>
<td>Subject-related learning and relevancy</td>
<td></td>
<td></td>
<td>He learned:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- about phosphorus and its significance in archaeological sites</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- how chemistry is used in archaeology</td>
<td></td>
</tr>
<tr>
<td>Learning about the museum</td>
<td></td>
<td>Earlier he thought that the museum was just for displays and he did not know that they worked with archaeologists</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understanding about learning</td>
<td>He and his classmates had learned much more from this coursework than just reading in books</td>
<td></td>
<td>The students had worked with authentic practice and gained experience by doing so</td>
<td></td>
</tr>
<tr>
<td>Knowing what or about something</td>
<td></td>
<td></td>
<td></td>
<td>She learned about archaeology, which she knew nothing about previously</td>
</tr>
<tr>
<td>Learning facts and information</td>
<td>The students learned about archaeology</td>
<td></td>
<td>The more phosphorus they found, the more likely that there were animals and humans present; One can localize where the animals were in the longhouse; One can take soil samples from postholes if the</td>
<td>She had been surprised to learn that in Denmark, before a new building is erected, it is very common for archaeologists to be called in to excavate in the area first.</td>
</tr>
</tbody>
</table>
Appendix All Tables

phosphorus concentration is high, that was where the animals were kept and where there was manure

Table 13.2 GLO 2 3x Jerry, Linda, Matthew, Naomi

<table>
<thead>
<tr>
<th>Content</th>
<th>Jerry</th>
<th>Linda</th>
<th>Matthew</th>
<th>Naomi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication skills</td>
<td>It was good to be in charge of their work and communicate about it to the 7th graders – that was a good way to practice dissemination</td>
<td></td>
<td>The students learned from telling about their work to the 7th graders;</td>
<td>The students learned from contributing to the guidelines their teacher wrote</td>
</tr>
<tr>
<td>Social skills</td>
<td></td>
<td>The students knew each other really well</td>
<td>The students had watched YouTube videos to see if they could find something about presentations that they could use at the Science Fair</td>
<td></td>
</tr>
<tr>
<td>Being able to do new things</td>
<td>He became much better at managing suction filtration in the lab</td>
<td>The students became more practiced in the lab from doing this coursework</td>
<td>He got a lot of practical experience in the lab from doing this coursework, e.g. handling the lab instruments and equipment;</td>
<td>The students became more practiced in the lab from doing this coursework</td>
</tr>
</tbody>
</table>

Table 13.3 GLO 3 3x Jerry, Linda, Matthew, Naomi

<table>
<thead>
<tr>
<th>Content</th>
<th>Jerry</th>
<th>Linda</th>
<th>Matthew</th>
<th>Naomi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive and negative attitudes in relation to an experience</td>
<td>The coursework was fun; Like with videogames, his interest was stimulated and his attention caught and kept – when that is the case, one can work longer with a topic than if it is boring;</td>
<td>The coursework was fun</td>
<td>The coursework was fun; It was important that the students were given responsibility – if he were to brag he would tell the others that about that</td>
<td>The coursework was fun; It was important for her that she and the others were given so much responsibility and that their results were important for the museum;</td>
</tr>
</tbody>
</table>
If you are stimulated and your attention is caught, you can work longer. Responsibility and that they were doing experiments for the museum. She learned something new every time they worked with this in the lab so she did not want to miss a single lesson.

### Motivation
- It was motivating that the museum said that the students’ results were important.
- It was motivating because it was not just a some dumb experiment but something that was going to be used in real life.
- It was motivating to work with a project that let the students do something other than sit in a classroom all day listening to theory.
- It was motivating that the students were given the responsibility to evaluate some of the results the museum uses to interpret their archaeological finds; It was very motivating that their class was the first class to do this for the museum; It was nice to get out of school and work in another environment.

### Feelings
- She was very impressed that the museum had so much confidence in them (3rd year students) and would entrust their soil samples to them – that made her feel that she had to be more responsible and work seriously in the lab and that there was an objective to their work.

### Perceptions
- He thought it was exciting that the students’ subject-related knowledge was useful for the museum; When one has fun, one learns better.
- When one has fun, one learns better – and one WANTS to learn and participate – he would not skip lessons if he thought they were fun and interesting;
- When one has fun, one learns better.

### Attitude towards an organization (e.g. the museum)
- His attitude towards the museum did not change – he thought Danish museum were really boring but was enthusiastic about big museums abroad.
- Her attitude changed – she might use the museum for school work but she would never visit it in her spare time.
- His attitude to the museum changed - earlier he had thought that it just had displays – he had not known how much archaeology was involved (he was very interested in archaeology).
- Her attitude changed – she had not considered the museum as a resource for school before this coursework but now she would use it again for school; She would probably not visit in her spare time.

### Table 13.4 GLO 4 3x Jerry, Linda, Matthew, Naomi

<table>
<thead>
<tr>
<th>Content</th>
<th>Jerry</th>
<th>Linda</th>
<th>Matthew</th>
<th>Naomi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Having fun</td>
<td>The coursework was fun</td>
<td>The coursework was fun; It was fun to be at the Science Fair [which took place at Westby Gymnasium]</td>
<td>The coursework was fun; She was surprised to learn that the museum was responsible for excavations and hired</td>
<td></td>
</tr>
</tbody>
</table>
and present the coursework to younger students; It was fun to go through a trial and error process to see what worked and what did not work
archaeologists to do them;

<table>
<thead>
<tr>
<th>Creativity</th>
<th>Exploration, experimentation and making</th>
<th>Being inspired</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is good to learn “outside” of books; It was good that the students got to work with the analysis themselves and try things out – there should be more of that kind of learning</td>
<td>He wanted to be an archaeologist so learning about archaeology was inspiring for him</td>
<td>It was inspiring that she and her class were the first students to do this coursework</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 13.5 GLO 5 3x Jerry, Linda, Matthew, Naomi</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content</strong></td>
</tr>
<tr>
<td>What people intend to do</td>
</tr>
<tr>
<td>Actions (reported or observed)</td>
</tr>
<tr>
<td>Change in behavior</td>
</tr>
<tr>
<td>Progression, e.g. towards further learning</td>
</tr>
</tbody>
</table>
Appendix All Tables

Table 13.6 Learning School cmp. to museum 3x Jerry, Linda, Matthew, Naomi

<table>
<thead>
<tr>
<th></th>
<th>Jerry</th>
<th>Linda</th>
<th>Matthew</th>
<th>Naomi</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>School learning</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The students would</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>not have gotten as</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>much out of it if</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>they had only read</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>about these experiments etc. in a book</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Museum learning</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One gets to work with things – one learns by handling things (soil samples) It is good to learn “outside” books</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The coursework was</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>so interesting that</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>he did not want to</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>miss a single lesson</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>The coursework was</td>
<td></td>
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</tr>
<tr>
<td>so interesting that</td>
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<tr>
<td>he did not want to</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>miss a single lesson</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are experts at</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>the museum; The</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>students were allowed to borrow the museum’s soil samples; The archaeologist gave them a lecture at the museum and afterwards the students and Nash asked him a some questions</td>
<td></td>
<td></td>
<td></td>
<td>After their guided tour, the archaeologist answered questions and they had a conversation with him</td>
</tr>
</tbody>
</table>

Table 13.7 Collaboration Adults Westby

<table>
<thead>
<tr>
<th>Description of the collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Angelina (M)</strong></td>
</tr>
<tr>
<td>The director of the museum took the initiative to collaborate with two upper secondary schools; The first meeting was with the museum director, the schools’ principals and the four teachers (two from each school) that were to be involved in the coursework; At first the museum director and the two schools’ principals felt that they should work together to produce coursework that was usable for both schools, but two of the teachers who had been chosen to develop the coursework could not agree how to do this, so instead two sets of coursework were produced (Bone analysis (Biology) and Soil analysis (Chemistry)); Meetings between her and the teachers from the two schools were held separately; There was a third set of coursework (Westby Harbor) that teachers from both schools collaborated on with the museum; There were a great many meetings to plan and organized the three sets of coursework; She took care of facilitating the contact and the first many planning meetings but organized experts [archaeologists to tell the students about the subject-related work that the museum did, relevant to their topics]; She attended the first meeting with the students and their teachers and presented the coursework and told them about the museum’s involvement in this collaboration; The teachers were in charge of the syllabus and made sure that everything complied with the study program and curriculum requirements – the museum serviced the teachers by</td>
</tr>
</tbody>
</table>
finding suitable research material and objects, e.g. skeletons or soil samples; 
The teachers borrowed the research material to analyze in the labs at school [the museum 
does not have laboratories], which meant that the students did not spend much time at 
the museum; 
The museum used the students’ research findings to compare with their own to see how 
big or small the deviations were; 
She was not involved in the coursework itself; 
She and Nash: 
- talked about how the museum could benefit from the students’ findings 
- would evaluate the coursework so as to improve it for the next time they used it 
- organized the coursework in modules so other museums and schools could use 
  them or emulate them so that the coursework can become an off-the-shelf item 
It was of paramount importance to her that the coursework was organized in modules and 
in great detail, and the teachers had contributed to that; 
If the museum had not gotten project funds through interface, there would not have been 
enough resources to collaborate like this; 
The teachers were very geared to developing new teaching material; 
The collaboration was made extra interesting because the students were 3rd year students 
who had chosen advanced Chemistry as an elective and were thus very motivated; 
The shortage of time was the biggest problem – these students were really, really busy and 
were very tied down to producing their science reports

| Nash (G) | It started with the museums’ new website interface and then the director of the museum 
here asked his school if they wanted to do a project so they formed a group and talked 
about what kind of project they could do – there were three projects and this one [soil 
analysis] was one of them; 
It was the museum director who set the wheels in motion; 
It took a long time to make the coursework because he had to write experiment guidelines 
for it [in Chemistry]; 
He and Angelina had a series of meetings to agree on the objectives of the coursework; 
The museum had soil samples could be used for relevant experiments in Chemistry – 
building History into the coursework was the museum’s task; 
An archaeologist told the class about how science is used in archaeology; 
Next time it would be good to plan for more days where the teacher and the museum 
people are there at the same time – this was something he would discuss with Angelina at 
their evaluation meeting; 
A good thing was that the collaboration contributed to make science more appealing by 
adding a historical angle; 
The museum’s historical input in the coursework made the objects and work interesting 
for the students; 
The adults respected one another’s knowledge and expertise – and the students 
recognized that e.g. the archaeologist was an expert; 
The teacher can always adapt his or her schedule so that there is time to develop new 
coursework, etc.; 
Next time it would be better to develop the form of the visit – instead of giving the 
students a lecture and then showing them the Iron Age house, it would be better to 
involve and activate the students while they are there – get them to reflect on what they 
are seeing; 
Instead of organizing it so the students just sit and listen to a lecture, he and the museum 
expert should have included some tasks for the students to do so they could be more active |

| Table 13.8 Differences - formal and informal learning environments Adults Westby |
|-------------|-------------|
| Formal      | Informal   |

93
Angelina (M)  
It is the formal curricular and syllabus objectives and requirements that determine the framework for the coursework; The product of the coursework was two science reports because that is part of their mandatory work in advanced Chemistry; It was specific requirements from the schools that determined which experts she found; The museum became an extra formal class room for the students

Nash (G)  
Reading a Chemistry book about an Iron Age site is not the same as actually standing in one

<table>
<thead>
<tr>
<th>Angelina (M)</th>
<th>It is the formal curricular and syllabus objectives and requirements that determine the framework for the coursework; The product of the coursework was two science reports because that is part of their mandatory work in advanced Chemistry; It was specific requirements from the schools that determined which experts she found; The museum became an extra formal class room for the students</th>
<th>A museum is normally an informal learning environment, where the museum educator normally has dialogues with the students and where things are normally quiet and calm and he or she walks around with the students quietly having a dialogues with them about the objects they see and the students ask the questions that they need to know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nash (G)</td>
<td>Reading a Chemistry book about an Iron Age site is not the same as actually standing in one</td>
<td>At the museum, there are objects one is not allowed to remove from the museum; There is generally an expert present who can tell about the objects on display, e.g. their history or how they were used, which makes it more interesting; It is kind of like a city tour where one learns about the history etc. of the buildings in a city</td>
</tr>
</tbody>
</table>

Table 13.9 GLO 1 Adults Westby

<table>
<thead>
<tr>
<th>GLO 1 Knowledge and understanding²⁸</th>
<th>Angelina (M)</th>
<th>Nash (G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The students learned:</td>
<td>- about Iron Age houses</td>
<td>- about an Iron Age settlement and an Iron Age house</td>
</tr>
<tr>
<td></td>
<td>- about phosphorus testing of soil samples and what this testing is for and what it tells the archaeologists</td>
<td>- about the historical age (Iron Age) and about how people lived and survived then</td>
</tr>
<tr>
<td></td>
<td>- about how Iron Age people lived in their houses</td>
<td>The students did not think about or connect what they learned at the museum with modern agriculture;</td>
</tr>
<tr>
<td></td>
<td>- how soils samples from the house sites show whether the Iron Age people had their animals inside their house or in a stable beside the house, and where the entrance to the house was, etc.</td>
<td>The students learned how science is used in archaeology;</td>
</tr>
<tr>
<td></td>
<td>The students got a concrete experience of what it was like to live in the Iron Age; The students learned about subject-related methods; The students learned about what the results of these soil analyses were used for and how they were communicated in an interesting way to the museum’s ordinary guests; The students learned that the museum is a knowledge resource and research institution</td>
<td>The students got an insight into the reality of the Iron Age by seeing the reconstruction of the house and working with the authentic soil samples</td>
</tr>
</tbody>
</table>

²⁸ Knowing what or about something; Learning facts or information; Making sense of something; Deepening understanding; How museums, libraries and archives operate; Making links and relationships between things [http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/](http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/) (Accessed Jan. 22, 2104)
Table 13.10 GLO 2 Adults Westby

<table>
<thead>
<tr>
<th>GLO 2 Skills&lt;sup&gt;29&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Angelina (M)</strong></td>
</tr>
<tr>
<td>The students learned:</td>
</tr>
<tr>
<td>- About looking at the museum’s map to see where the soil samples were taken, etc.</td>
</tr>
<tr>
<td>- How to extract and analyze soil samples</td>
</tr>
<tr>
<td>- How to read the museum’s phosphorus map</td>
</tr>
<tr>
<td>- How to place the Iron Age house (e.g. stable, doorway) on the basis of their results</td>
</tr>
<tr>
<td>- About their own method and the museum’s method for analyzing soil samples</td>
</tr>
<tr>
<td>- About how to communicate what they had learned at a Science Fair for 7&lt;sup&gt;th&lt;/sup&gt; graders, where they also talked about the museum and showed objects they had borrowed from the museum</td>
</tr>
<tr>
<td>- About the tools archaeologists use in the field</td>
</tr>
<tr>
<td>The students were extremely precise and very careful in the measurements and in how they treated the soil samples, which was good scientific research procedure</td>
</tr>
<tr>
<td><strong>Nash (G)</strong></td>
</tr>
<tr>
<td>The students learned:</td>
</tr>
<tr>
<td>- About how to write guidelines for an experiment</td>
</tr>
<tr>
<td>- About handling chemicals and keeping everything clean</td>
</tr>
<tr>
<td>- How to measure how high a door was in an Iron Age house from where it had fallen down and that they could not measure windows, only things that were at ground level;</td>
</tr>
<tr>
<td>- To spend a long time in the laboratory</td>
</tr>
<tr>
<td>- To mix large amounts of chemicals so they had enough to analyze all the soil samples</td>
</tr>
<tr>
<td>The students became practiced at mixing chemicals, something they do not normally have time to become;</td>
</tr>
<tr>
<td>At first there was no guidelines – the guidelines were developed partly on the basis of their lab experiences and results (he helped them with the guidelines, transferring what they discovered in their lab work);</td>
</tr>
<tr>
<td>They were 3&lt;sup&gt;rd&lt;/sup&gt; year students so knew each other well, but because they were in a different learning environment and incorporated new practices in their lab work, they discovered new things about each other and themselves;</td>
</tr>
<tr>
<td>The groups coordinated their findings and helped each other – they do this normally but this time it was more necessary because there were so many samples to be analyzed and there was a time factor;</td>
</tr>
<tr>
<td>The students were good at learning from each other;</td>
</tr>
<tr>
<td>The class became more close-knit from doing this coursework (working in the lab, visiting the museum together);</td>
</tr>
<tr>
<td>When the atmosphere in a class is good, the students learn better than if they are worried about what the other students think and therefore keep quiet;</td>
</tr>
<tr>
<td>The experiences from this coursework is something he and the students will be able to use in future coursework and lessons, e.g. not to give up if something does not work the first time and that it is important to do an experiment carefully;</td>
</tr>
<tr>
<td>The students learned about how to communicate their results to 7&lt;sup&gt;th&lt;/sup&gt; graders and that it was hard to do that a whole day at the Science Fair;</td>
</tr>
<tr>
<td>The students used some of the museum’s excavation tools as part of their Science Fair presentation</td>
</tr>
</tbody>
</table>

<sup>29</sup> Knowing how to do something; Being able to do new things; Intellectual skills; Information management skills; Social skills; Communication skills; Physical skills [http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/](http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/) (Accessed Jan. 22, 2104)
### Table 13.11 GLO 3 Adults Westby

<table>
<thead>
<tr>
<th><strong>GLO 3 Attitudes and values</strong>&lt;sup&gt;30&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Angelina (M)</strong></td>
</tr>
<tr>
<td>The fact that the museum needed their test results was enormously motivating for the students; The students asked many questions because the museum took them very seriously and told them that their science reports would be incorporated in the museum’s documentation – they realized that they were not just working for their own sake (to get a good grade) but that their results would used in an authentic context; Nash told her that the students had been completely absorbed in their work and went to great lengths to do it meticulously; She hoped the students had realized that the museum is much more than dusty display cases and a venue for cultural events, and that it produces research and knowledge that is important for the whole world; The students’ view of the museum changed from only associating it with history to seeing that it was relevant to Chemistry; The students were pleased to be allowed to borrow objects from the museum and handled them with great respect</td>
</tr>
<tr>
<td><strong>Nash (G)</strong></td>
</tr>
<tr>
<td>It was motivating for the students to learn about the historical context of the soil samples and why their experiments in Chemistry were relevant and necessary and what the results were used for; He brought a Styrofoam box with soil samples to class and told the students that they were from an Iron Age village and the students were very excited – they were also given maps that showed where the soil samples had been extracted, so history itself made it an interesting learning experience; The students were proud to tell their school mates that they were working with material from Iron Age villages; The students were excited to meet an expert – the archaeologist – and they identified themselves with him a little bit because he had studied and was knowledgeable and they respected that; The students learned about what science can be used for, also in relation to their own futures</td>
</tr>
</tbody>
</table>

### Table 13.12 GLO 4 Adults Westby

<table>
<thead>
<tr>
<th><strong>GLO 4 Enjoyment, inspiration, creativity</strong>&lt;sup&gt;31&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Angelina (M)</strong></td>
</tr>
<tr>
<td>The students were extremely curious and asked a great many questions while they were at the museum, far more than she had experienced earlier; The students were inspired by Nash, who was intent on making the realize that it was important to analyze the soil samples but it was also important to be able to communicate their results to ordinary people; When the students were at the museum and saw the reconstruction of the longhouse, they entered into a subject-related discussion with the archaeologist and their teacher</td>
</tr>
<tr>
<td><strong>Nash (G)</strong></td>
</tr>
<tr>
<td>The students thought it was fun to learn about the Iron Age house and how small it was and the people living in it had been and they started talking about hobbits and hobbit</td>
</tr>
</tbody>
</table>

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<sup>30</sup> Feelings; Perceptions; Opinions about ourselves (e.g. self esteem); Opinions or attitudes towards other people; Increased capacity for tolerance; Empathy; Increased motivation; Attitudes towards an organization; Positive and negative attitudes in relation to an experience [http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/](http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/) (Accessed Jan. 23, 2014)

<sup>31</sup> Having fun; Being surprised; Innovative thoughts; Creativity; Exploration, experimentation and making; Being inspired [http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/](http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/) (Accessed Jan. 23, 2014)
It was motivating for the students to work in the laboratory to analyze the soil samples – this was not just a school assignment; it was interesting for the students to visit the museum and meet an expert who gave them a lecture about i.a. the Iron Age house; the students were motivated by being removed from their daily routine, which sharpened their attention; they enjoyed telling the others at school about this project.

Table 13.13 GLO 5 Adults Westby

<table>
<thead>
<tr>
<th></th>
<th>GLO 5 Activity, behavior and progression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angelina (M)</td>
<td>The students asked an enormous number of questions while they were at the museum, far more questions than they were used to getting; it is important for the students’ social responsibility that they know about how to use the local institutions, e.g. when they have children of their own</td>
</tr>
<tr>
<td>Nash (G)</td>
<td>The students became more self-confident in the lab after repeating the analysis many times; the students understood the principle of trial and error and learning from their mistakes; Because the students were taken out of their normal routine, they were “more awake” and aware</td>
</tr>
</tbody>
</table>

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32 What people do; What people intend to do; What people have done; Reported or observed actions; A change in the way people manage their lives. [http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/](http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/) (Accessed Jan. 23, 2014)