The IT-folder - IT Supported Inclusion of Children with Reading Disabilities in Normal Classes
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Abstract: This paper presents the philosophy and project design of a three year action research project, taking off in September 2007. As a consequence of the consent to the Salamanca Statement on special needs education from 1994, the Danish parliament has recommended that all children with learning disabilities should be transferred from special classes to the ordinary classes in primary schools. This vision is called The Spacious School and the idea of the vision is that these children should be integrated and thus included in the social and learning activities like any other child in the class. The government’s vision is to provide the children with an IT-backpack containing a laptop pc. However the IT-backpack is eye-catching and also heavy especially for the younger children.

In Rødovre Municipality, - a suburb to the Danish capital Copenhagen - the pedagogic development centre (PUC) believes that successful inclusion must integrate the political vision with focus on the benefit for the individual subject. Therefore it is necessary to think of IT-support as an everyday, natural substitution at the same level as paper and pencils, rather than a compensational disability aid or a technological fix. Consequently, the PUC invited the Danish School of Education – Århus University (DPU) into a collaborative action research-based development project, where the IT-backpack is substituted by a touch screen tablet pc for children from first to third grade, as they are not part of the IT backpack project. The basic understanding in the project is that IT as a substitution and used as a lever or change agent for the inclusion of children with reading disabilities, affects the full context around the child: the other children, the teachers, the parents, the pedagogy and the activities in class. The tablet itself will contain supporting software and e-learning material, all of which have not yet been decided upon, as we expect that specific user needs and requirements for software will emerge during the project. Consequently, apart from being understood as hardware and software, the tablet must be understood as 1) an artefact that must be included along with other artefacts; 2) an individual attribute that must be including, not stigmatizing; and 3) a social actor in its own right, as the tablet affects the collaborative activities and social interaction.

The paper unfolds the philosophy of the project and presents the corresponding project design.

Keywords: ICT, e-learning, action research, inclusion, integration, reading disabilities, Salamanca Statement

1. Background
Since the UN World Conference on Special Needs Education in Salamanca, Spain in 1994, inclusion has become an issue. The Salamanca Statement (Salamanca Statement 1994) addresses the problems and rights of all kind of learners who for different reasons are excluded or segregated from ordinary education. As a consequence, the concept the inclusive school is now widely accepted throughout Europe and international organisations such as UNESCO’s Institute for Information Technologies in Education (IITE) and the independent Centre for Studies on Inclusive Education (CSIE) work politically for inclusion and support initiatives related to research and development of everyday practice in educational institutions.

According to Dyson (in Daniels & Garner 1999), The Salamanca Statement does not define inclusion and leaves the concept open for interpretation within at least four discourses: politics, ethics, economics and pragmatics. In his analysis of the statement, Dyson finds that the discourses can be grouped into two meta-discourses which are mutually incompatible because they are based on entirely different grounds and target-groups (table 1):

Table 1: The four discourses of the Salamanca Statement

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<tr>
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<th>Political – ethical discourse</th>
<th>Economic – pragmatic discourse</th>
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<tbody>
<tr>
<td><strong>Basic question</strong></td>
<td>What the inclusive school IS</td>
<td>What the inclusive school CAN DO</td>
</tr>
<tr>
<td><strong>Ontology</strong></td>
<td>Philosophical and ideal arguments: Human rights, democracy, justice</td>
<td>Arguments resting on empirics and measurability: Effectiveness</td>
</tr>
<tr>
<td><strong>Target-group</strong></td>
<td>Minorities of all kinds</td>
<td>Groups with special education needs</td>
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In the UK, the government tries to embrace this ambiguity by supporting “… the 'strong educational as well as social and moral grounds’ for students learning together in the mainstream” and by declaring “…inclusion as the ‘keystone’ of its education policy” (Rustemier 2002, chap. 2). In Denmark the inclusive school-concept was substituted in the discourse by the spacious school-concept around 2000. However, in this new concept the ambiguity of the original four discourses of the Salamanca Statement is not taken into account (Holmgaard 2004) and therefore it is difficult in the Danish discourse to distinguish between forms of inclusion. In some contexts inclusion means the same as in the CSCI definition based on the political-ethical discourse: ‘Inclusive education means disabled and non-disabled children and young people learning together in ordinary pre-school provision, schools, colleges and universities, with appropriate networks of support’ (Rustemier 2002). In other contexts inclusion is part of the economic-pragmatic discourse and tends to mean integration. Consequently, integrated learners do not participate but lead a parallel presence within the same space as the other learners (Tetler 2000) or, which is more common, the integrated learners receive more or less special needs education away from the ordinary class (Egelund, 2004). At present, having a liberal government in Denmark, the political interpretation of the Spacious School vision is dominated by the economic-pragmatic discourse and it’s effectiveness ontology.

2. The Danish context
The Danish Ministry of Education has since the mid 90s encouraged a wide range of activities initiated by the consent to the Salamanca Statement along with other pedagogic development efforts and a massive implementation of ICT in primary schools. The OECD PISA (Programme for International Student Assessment) study results in 2000 therefore produced a national shock (Undervisningsministeriet (the ministry of education) 2004). The PISA study established that 1 – 1½ mill. adult Danes did not possess reading skills to complete professional training (PISA 2000). Partly as a consequence of the PISA study, the Education Act was changed in 2003. As late as in 2005 the minister of education stated that ‘weak reading skills may constitute the most serious social problem in Denmark’ (Authors translation, Undervisningsministeriet 2005) and since PISA, inclusion, the spacious school, e-learning and ICT has more and more focused on reading disabilities and special needs education – that is the pragmatic and economic meta-discourse of the Salamanca Statement.

2.1 National initiatives – the spacious school
Since Salamanca, technology has diffused into all parts of our social existence along with a broad variation of ICT applications, the internet and mobile devices. Both in the EU and nationally, ICT and education has been promoted through plans of action, development programmes, research programmes and substantial economic resources. The idea of using ICT and e-learning as a lever or change agent for inclusion has therefore become increasingly relevant. In Denmark the ITMF project (IT and Media in primary school) from 2001 to 2004 supported 105 projects on one third of all schools with 340 mill DKK. Among other projects, learners with reading disabilities were further integrated through the IT-backpack containing a laptop pc with e.g. text-to-speech applications; spell checker, and an OCR scanner. In segregated reading classes, learners acquired compensational skills which in combination with the IT-backpack allowed them to be integrated into the ordinary class. However, the group of children who received the IT-backpack as a compensational aid in these projects was limited to 4th to 7th grade, as this age group dominates the special education efforts (Haven & Nielsen 2004). At present the IT-backpack is being implemented in primary schools all over the country as part of the spacious school vision (Undervisningsministeriet 2003).

2.2 Local initiatives - Project Spaciousness in Rødovre municipality primary schools
Project Spaciousness in Rødovre Municipality Primary Schools is a local project initiated in 2004 under the Education Act from 2003 and with reference to the Spacious School vision. Planning, implementation and evaluation of education and teaching are all subject to inclusion and the EU principle of subsidiarity. All children from 5th to 7th grade identified as learners with special needs in relation to reading and spelling are today connected to the Rødovre Dyslexia School, established in 1995 and since then, the local offer to average intelligent children with massive and continuing reading-, writing and spelling disabilities. All teachers in the municipality, who have learners with an IT-backpack in their class, are introduced to the IT-backpack.

3. Project IT-folder
The consultants at the Rødovre pedagogic development centre (PUC) and the manager of the Rødovre Dyslexia School are all involved in the IT-backpack project. They were also aware of the
ambiguity of the inclusion- and spaciousness-concepts as well as the mutual incompatibility of the Salamanca Statement meta-discourses, mentioned above. They wanted to bridge the gap between the two meta-discourses in the Salamanca Statement and integrate humanity and ethics into the economic-pragmatic perspective stressed by the government. They wanted to focus on the benefits for the individual child. They realized that the available knowledge of how to actually implement inclusion and use ICT and e-learning as a lever in the process, was scarce and prescriptive rather than process oriented or aimed at individual benefits. They also believed that in some cases the ethic dimension of inclusion may imply that some children do need time in special classes as their problems cannot be overcome through full time integration in the ordinary class. In other words, a too rigorous, economic-pragmatic interpretation of the vision of inclusion may actually lead to social exclusion. Therefore, they contacted the Danish School of Education – Århus University (DPU) and suggested a shared development- and research project.

In the following, the paper presents the project’s framework developed in collaboration between the author and the PUC working-group.

3.1 The philosophy of inclusion in the project

A major concern for the PUC working-group was the future consequences for children with reading disabilities in a society where literacy becomes more and more important. The relationship between the visions of the inclusive school and the inclusive society was one of the drivers behind their project idea. This is, as mentioned above, one of the weak links in the Salamanca Statement as the visions belong to respectively the economic-pragmatic and the political-ethical meta-discourses. The group asked how inclusion may secure that individual children overcome their disabilities and get the necessary strength (political-ethical) to acquire the key competencies of the future (economic-pragmatic), which according to OECD and Rychen and Salganik (in Rychen & Salganik 2003) are: To be able to participate and interact socially and collaboratively in heterogeneous groups; To be able to act autonomously in complex and changing environments; To be able to interact with ICT on all levels of complexity from symbolic interpretation to the search for and use of knowledge and information.

In addition to this, the working-group believed that the younger children in the first to the third grades with identified potential reading disabilities could also benefit from ICT-supported integration. This could prevent a negative individual development during the time before the young children were old enough to participate in the IT-backpack initiative and the available special needs offers. Consequently the target-group of the IT-folder project aims at children from the first to the third grades.

3.2 The philosophy of substitutionary ICT in the project

As described above, ICT is in general thought of as a compensation aid, that is, ICT reduces the consequences of the learners’ handicap in relation to the learners’ personal limitations and support integration rather than inclusion. This view is prevailing in a book from 2004 (Florian & Hegarty 2004) and even in a paper from the first International Conference on ICT & Accessibility in 2007, where ICT is seen as compensatory rather than substitutive (Kotsik & Tokereva 2007). “If ICT is to be a ‘tool for inclusion’ then one might expect that a vision of ‘what inclusion is’ would be a part of the approach, as Kieron Sheehy writes in the review of Florian & Hegarty’s book (Sheehy 2005 ).

The ICT involved – IT backpack, IT-folder etc. – is the same thing, irrespective to the function as either compensational or substitutional. From an outside observer perspective, there may be no immediate phenomenological difference to observe. The difference is not inherent in the technology but in the contextualized interpretation of attributes, which the technology applies to the user. That is, the difference is inherent in the way of thinking about technology = the philosophy. Thus, compensational ICT is thought as a special visible attribute differentiating the user from others. Compensational ICT may help integrate or - worst case - stigmatize the user. In contrast, ICT as substitution is thought as a natural, visible part of the person using it. Substitutional ICT is thought to allow the user to participate on equal terms with other learners along with an acknowledgement of different ways of learning. Consequently, compensation and integration are interrelated pairs, as is substitution and inclusion.

The distinction can be further elaborated using Heidegger’s phenomenology (Heidegger 1996). ICT as compensation and integration of disabled learners can be understood in terms of Heidegger’s concept zeug – equipment – the means through which we interpret our being in the world. This,
Heidegger calls being *ready-to-hand*. In contrast, ICT as substitution and inclusion of disabled learners can be understood in terms of Heidegger’s concept *dasein* – contextualized being-in-the-world where the properties simply occur, which Heidegger calls *presence-at-hand*. Consequently, we think in the IT-folder project of ICT in three existential forms:

- **Artefact**: ICT as hardware, software (support applications and e-learning) and functionality (interaction design)
- **Attribute**: ICT as properties belonging to the user and/or ascribed to the user by others
- **Social actor**: ICT in contextualized use and interaction

All three existential forms can be either *zeug, ready-to-hand* or *dasein, presence-at-hand*. As the IT-folder project aims at *presence-at-hand* existence: Substitutional ICT and inclusion of the user, the ICT philosophy of the project implies the following choices and assumptions regarding the three existential forms:

- **The artefact**: The target-group is young children who cannot easily use the IT-backpack. It is too heavy to carry around and it is eye-catching. For the artefact to become *present-at-hand* it must be practical to carry around and easy to use. Therefore, the chosen artefact is a tablet pc with a touch screen the size of an A4 pad. The software on the tablet must also meet the user needs of the target-group. However, as this is an entirely new approach, we have to start from scratch by implementing existing software used in the IT-backpack project. Identification of user needs and software requirements is part of the action research.
- **The attribute**: For the ICT attribute to become *present-at-hand* the user must accept it as an integrated part of his/her personality in the same way as others – the class, teachers, parents etc. - must ascribe positive connotations to that attribute, its properties and the user.
- **The social actor**: For the ICT social actor to become *present-at-hand*, the practice – that is the pedagogy, the activities, the social interaction, the interaction design of the artefact – must be thought of and designed to create participative space for the user of the IT-folder

The three forms of existence are interdependent. They can be distinguished as analytical units but they cannot be separated in practice. The understanding of substitutional ICT and integration as *dasein presence-at-hand* thus implies, that the main effort lies in the social and pedagogical implementation of ICT in specific contexts with specific subjects, rather than in the general implementation of technology as such. Of course the quality and nature of hardware, software, functionality and organisational it-support means something. This is demonstrated in our choice of the tablet pc as our ICT artefact. However, if ICT is only thought of as a thing, an artefact – a *zeug ready-to-hand* –, then the transformation from compensation/integration to substitution/inclusion cannot occur.

4. The research

As research aimed at the inclusion of learners with reading disabilities is scarce and mainly focussed on curriculum access and ICT as a tool, we have no previous knowledge to lean on. We need to know how ICT can be used in a pedagogic-didactic practise in relation to the three above mentioned, interrelated forms of existence: Artefact, attribute and social actor. We therefore decided to run the project as an action research based development project in close collaboration between the PUC working-group, the involved teachers, children, families and the author.

Inclusion is basically an emerging process and inherently a learning process for everybody involved. Consequently we may in the beginning expect to see compensation and integration rather than substitution and inclusion. Long term action research allows us to observe the phenomenological representations of an emerging interrelation between ICT and inclusion: Possibilities and barriers; the gradual transformation from integration to inclusion; changes in pedagogic-didactic design; involvement in the children’s social environment; perspectives we have not anticipated. Action research allows us to benefit from a growing insight based on continuing knowledge sharing and an ongoing dialectic interaction between collecting, analyzing and using data throughout the progression of the project. Action research allows us to intervene and modify the project design though out the project life cycle.

4.1 The Project Design

The project is designed as four steps gradually moving from small scale model projects to larger scale implementation (figure 1).
Preparations: During the autumn 2007, the project’s philosophy is introduced to the participating teachers, special teachers and IT-supporters. Through ICT-literacy courses, the teachers become familiar with the tablet pc and the software as artefacts. In special designed workshops, the teachers will explore ICT as an attribute and a social actor, thus becoming familiar with the philosophy of the project. These workshops are uniquely designed for this project. The teachers will explore the interrelationship between the three forms of existence through role-play in special designed scenarios with actual use of the tablet pc and software. In these role-plays the teachers experience the role of the reading disabled user of the tablet. During these sessions, we expect that barriers and possibilities may emerge in the field of tension between awareness on the tablet and contextual awareness. The workshops aim at the production of model-projects designed by the teachers in relation to their own practice, and hopefully based on an emerging understanding of what it means to be the participating user of the tablet. In this process the teachers reflect on how they understand inclusion; how they organize their teaching in relation to spaciousness; and their understanding of the challenges a reading disabled child meets. The model-projects are further developed until January 2008 and during this period the teachers receive support and share knowledge in an online collaborative learning environment. In this phase of the project the parents are introduced to the author as researcher and the design of data collection.

Small Pilot: The model projects are run by the teachers while the researcher collects data through participant observation. During the small pilot, the class and the user of the tablet participate in the model project as a real life experiment integrating ICT in the three forms of existence. The gained experience and insight is discussed and shared immediately after the researcher has been present in class in order to document the experience and identify potential needs for modification. Additionally, knowledge sharing is organised as meetings among the project participants. Though this process we expect to identify knowledge relating to the social- and attribute perspectives on ICT, as well as user needs related to ICT as a artefact.

Larger Pilot: Basically, this phase is run in the same way as the previous phase. The experienced teachers may be ready to extend their inclusive activities, while new teachers are taken into the project. The aim of this phase is to produce more research based knowledge while at the same time develop structures that ensure the projects sustainability beyond the projects lifecycle.

Large Scale Project: As the project runs until 2010 we cannot predict how or to what extent inclusion may be implemented in Redovre Municipality. However, the experiences and the knowledge production from the previous phases constitutes the basis for formulating pedagogic-didactic recommendations, cases and scenarios related to Project Spaciousness in Redovre Municipality Primary Schools. We also expect the project to produce knowledge about user needs, user experience and requirement specifications for the future design of inclusion-supporting hardware and software. This final phase aims at further consolidation of the sustainability of Project IT-folder.

We expect that the projects research findings may be useful outside the project scope, e.g. for Project IT-backpack in Redovre and wider contexts such as Danish primary schools and beyond.

4.2 Data Collection and Action Research
The projects research unit is the everyday practice, embracing the complexity of the interrelated interaction between the single user of the artefact who bears the attributes related to the artefact and the Communities of Practice in which the user participates (Wenger 1998), embracing ICT as a social actor. Therefore the data collection focuses on everyday life in school and at home, as well as the occurring changes over time in relation to e.g. the learner’s role and self understanding; the teacher’s work; the practice of the Communities of Practice; parents’ role and understanding; demands to the ICT The project intends to capture the complexity and describe the essential conditions that influence the quality of the process of change, which the project intends to implement.
The data collection will primarily be conducted through the use of qualitative methods: Participant observation in the school will focus on the single learner with reading disabilities and the interaction between the class and the teacher; Qualitative interviews with learners, teachers and parents will focus on the informants’ understanding of the inclusion process. The action research will produce data through the collaborative workshops where the philosophy is introduced and the model-projects designed and through the actual testing in practice of the model-projects that are to be designed during the preparation phase. Also the knowledge sharing and meetings throughout the project will produce data. These meetings are where the modification of the inclusion project takes place. Thus, the qualitative data collection and the action research are not separated but integrated research activities, both contributing to the continuing dialogue and development of the project (see also the model, figure 2).

In the Danish school system there is already a platform for communication between parents, learners and teachers. This platform - skoleintra (School intranet) - will in the project be used as a knowledge sharing portal for all participants. The discussion forums on skoleintra may also be a source of data production for the project.

5. The projects perspectives
We expect the project to identify areas where inclusion and the use of the IT-folder as suplementary ICT for the benefit of the individual child with reading disabilities, imply specific demands to
- Learners’ everyday environment inside and outside school
- The way the adults contribute actively to the inclusion process
- The pedagogic-didactic thinking about inclusion
- The involved persons’ view on learning
- The design and use of ICT
We expect the project to contribute with knowledge and experience which may make it possible to implement the idea and intentions of the project to all learners with reading disabilities in Redovre municipality and other Danish schools as well as abroad. In the long term, we also hope to extend the findings to learners with other learning disabilities than reading.

Literature

Figure 2: The complexity of the project: The interaction between the emerging practice and the action research and the continuous change of relations within the research unit


