

## **TASTE Didactics – Food and Critical Thinking**

### **1. Excellence**

This proposal aims to change children's ability to make informed and reflected food choices by developing critical thinking and taste competences for school and kindergarten children. Food education activities in the Western world have focused almost exclusively on rigid health norms and hegemonic understandings of nutrition. One of the consequences of this is that little or no space is left for children to reflect upon their eating experiences. The aspect of individual and community-based taste has been forgotten, and even when taste is included, most food scientists and teachers reduce taste to the sensory properties of food, i.e., sour, sweet, salty, bitter and umami. Taste is a complex and highly integrated experience involving physiological, psychic and social dimensions, all of which are equally important. Therefore, there is a need to deepen our knowledge about, and teaching of, taste competence. Investigating how taste education impacts children in contemporary schools and kindergartens, TASTE strives to develop critical thinking connected to taste competences. The novelty lies within using different taste dimensions as an analytical tool. Most importantly, TASTE will develop and implement a taste didactic that will allow children to make informed and reflected food choices based on critical thinking. TASTE will involve the subject of food and health (FH) in primary school, outdoor teaching in Norway and Denmark, and meals and food-related activities in kindergartens in Norway. The didactical approaches to taste education respond to calls for research in prior studies, which conclude that children must be included in a more critical reflective process. The ambition is that TASTE will contribute research-based, taste didactical approaches to practice. TASTE addresses several of the United Nations (UN) Sustainable Development Goals: Goal 3 (Good health and well-being), Goal 4 (Quality education) and Goal 17 (Partnerships to achieve the goals). Critical thinking is a central competence in UNESCO's Education for Sustainable Development Goals: the ability to question norms, practices, and opinions; to reflect on one's own values, perceptions and actions; and to take a position in the sustainability discourse (UNESCO, 2017:10).

#### **1.1 State of the art, knowledge needs and project objectives**

There is a general perception of the pleasure of taste as something that needs to be controlled to resist eating unhealthy and fattening foods. Taste is seen as a barrier to the adoption of 'correct' eating habits and not recognised as a source of pleasure or a central way of understanding and approaching the world through the senses (e.g., Battjes-Fries et al., 2014; Dazeley et al., 2012; Kim & Chung, 2014). Critics have described this approach as hegemonic nutrition (Hayes-Conroy & Hayes-Conroy, 2013). From a hegemonic nutritional perspective, there is only one truth about food, nutrition and health, and because nutrition "begins and ends with nutritional guidelines," this truth is universally applicable (Hayes-Conroy & Hayes-Conroy, 2013, p.1). One of the consequences is that little or no room is left for children to reflect upon their eating experiences or to engage in the sensual pleasures of food (Rich & Evans, 2015). We recently conducted a critical literature review to investigate how taste is used in contemporary food education (Leer & Wistoft, 2018) and argue that most of the literature on taste education (e.g., Dazeley et al., 2012) employs a reductive understanding of taste and is essentially mistrustful of it. In this regard, the studies echo Puisais's (1987) ambition to uphold national taste borders and identity; they also share the idea that taste education for children can be used as a tool to improve children's health. In other words, taste education becomes a tool to push children towards 'hegemonic nutrition' (Leer & Wistoft, 2018). Moreover, the studies operate within a behaviouristic pedagogy that is only interested in behavioural modification; this can be understood through Foucault's theories of corporeal management (Foucault, 1995). Other pedagogical aspects of taste education are not explored in the literature, and children's perspectives or experiences of taste are not meaningfully integrated into the study design or didactical goals (Leer & Wistoft, 2018). TASTE aims to address this knowledge gap through a reflective taste pedagogy and respond to the need to include children in a more reflective process in taste education, as called for in several studies (e.g., Jonsson et al., 2005; McKinley et al., 2005; Mustonen et al., 2012; Mustonen & Tuorila, 2009). This reflective taste pedagogy, based on the tradition of critical thinking, should not be anchored in behaviourist ideas but rather focus on how taste education can develop critical awareness and reflection in specific contexts centred on food. Except for a recent study by our research team (Christensen & Wistoft, 2016), TASTE is the first of its kind to include a child- and taste-centred didactical approach in both schools and kindergartens. By introducing the Norwegian and Danish FH curriculum and the kindergarten framework plan into scientific discussions of taste and food education, this project not only echoes expansions of consciousness or *doing nutrition differently* (Hayes-Conroy & Hayes-Conroy, 2013; Rich & Evans, 2015; Coveney et al., 2012) but seeks to attach even greater importance to, and place emphasis on, children's perspectives and agency in taste education—and do so by highlighting concepts such as critical thinking and decision-making in food education in general. The idea behind taste education is that taste must be realised by

individuals themselves through learning processes. Learning cannot be *enforced* by external actors; on the contrary, it is an internal mental process that can only be *supported* from 'the outside'. This implies that taste educators can only teach taste indirectly, for example by establishing a supportive teaching and learning environment and supporting learning processes that lead towards an individual as well as a collective understanding of taste.

Critical thinking is defined as reflective and reasonable thinking that is focused on deciding what to believe or do (Ennis, 1985). It is considered one of the most important competences for children in the future, especially concerning sustainability (UNESCO, 2017). The fact that children actually use what they learn to make informed and reflected choices is an important purpose of school and clearly stated in the core curriculum values and principles for primary and secondary education: "the school should help students to be inquisitive and ask questions, develop scientific and critical thinking and act with ethical awareness" (Norwegian Ministry of Education and Research, 2017, p.7). In the Norwegian and Danish FH curricula, one of the competence aims is to critically evaluate food production and discuss how consumer power can affect local and global food production. FH has an increased focus on taste, with academic goals clearly stating that taste is an area about which students should receive in-depth knowledge (Børne- og undervisningsministeriet, 2019; Norwegian Directorate for Education and Training, 2020). In the Norwegian 'Framework Plan for kindergarten', children's critical reflections are central as well (Norwegian Directorate for Education and Training, 2017).

The pedagogical approaches represent the general character or guiding principles of designing learning processes in education for sustainable development (ESD). Specific methods in line with the principles of critical thinking are needed to facilitate the learning process. In ESD, methods that foster competences through active learning are favoured. Certain pedagogical methods can be particularly recommended for ESD (Lysgaard & Jørgensen, 2020; UNESCO, 2017). For instance, Aadland (2019) argues that an under-utilised resource for teaching ESD in FH is to use the arena outside the classroom. The term outdoor learning entails all kinds of learning that might take place outside the classroom. Four 'zones' of outdoor learning exist: the school grounds, the local environment, day excursions/field trips, and expeditions that involve being away from home overnight (in Norway: school camp/leirskole) (Beames et al., 2012). Outdoor learning is widely used in northern European educational contexts (Mygind, 2020). Jordet (2010) defines outdoor learning as a framework where learning takes place through students' use of body and senses, and through communication and social interaction. Outdoor learning is characterised by a shift in the balance of power between teacher and student in the direction of the student (e.g., Waite et al., 2015), and may improve students' critical thinking (Christie et al., 2016). A different choice of learning arena and method can provide different achievement goals within the framework available to the school. Using learning arenas outside the classroom requires a student-active pedagogy (Jordet, 2010) and strong commitment by the teachers (Wistoft, 2013) which is the basic for an action-oriented didactical outdoor practice. Students' sensuousness, physicality, creativity, and emotions interact with their cognitive functions.

Despite taste and critical thinking being clearly stated in the competence goals in the FH curriculum and the UNESCO ESD goals, limited attention is paid to *didactical* and *critical thinking* regarding *taste* in FH, food and meals in kindergartens and ESD. To our knowledge, no research has been conducted in this area.

The **primary objectives** of TASTE are to PO1) investigate how critical taste education impacts children in school and kindergarten, and PO2) develop and implement a taste didactic that will allow children to make informed and reflected food choices based on critical thinking.

The **secondary objectives** (SO) are to:

- SO1) assess how critical taste *reflection* is taught and learnt in the FH subject in schools and kindergartens, and make comparisons between Norway and Denmark
- SO2) identify taste dimensions and critical taste *competences* among children in schools and kindergartens
- SO3) develop novel didactical approaches to critical taste education in *dialogue* with school and kindergarten children and teachers.

## 1.2 Research questions (RQ), theoretical approach and methodology

TASTE is organised in five work packages (WP), as shown in Figure 1.

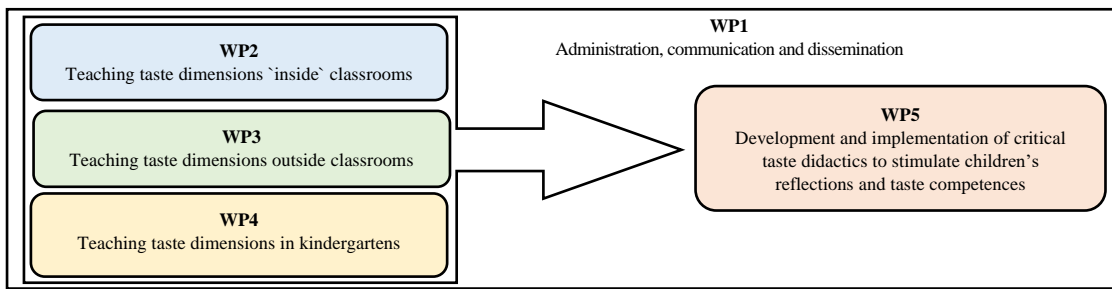


Figure 1.  
The TASTE project

- RQ1) How are critical taste reflections and competences taught and learnt in FH in schools today `inside` (WP2) and outside the classroom (WP3) and during meals and food-related learning activities in kindergartens (WP4)?
- RQ2) What characterises school and kindergarten children's perception of taste and their critical taste competences (WP2-4)?
- RQ3) What taste dimensions are present in FH in schools and kindergartens, and how do these taste dimensions affect children's critical food choices (WP2-4)?
- RQ4) What didactical approaches facilitate the teaching and learning of critical taste competences in schools and kindergartens (WP5)?

**Theoretical framework:** We describe the experience of taste as a result of interplay between three mutually isolated but structurally linked functional systems, inspired by Luhmann's theory on social systems (Luhmann, 1995), i.e., the **physiological**, the **psychic** and the **social** system (Wistoft & Qvortrup, 2021). The physiological system includes the taste buds with their receptors that transmit electric signals to the brain, but these sensory impulses do not become taste until structural links are connected between the physiological system and the consciousness, i.e., the psychic system. To elaborate, taste experiences (sweet, salty, sour, bitter and umami) are not produced by the taste buds alone but through a combination of sensory perceptions from all senses: how something tastes depends on sight, hearing, smell and touch, including mouthfeel. Taste experiences also depend on memories, social preferences and categorisations, as well as feelings, mood, etc., i.e., phenomena in the psychic realm. We *sense* with our physiological system, but we *taste* with our psychic system, and our taste experiences are shared with others and draw on categories of taste experience from the social system of communication. Taste is a result of complex interplay between these three types of system (ibid). We need to include psychological and social dimensions of taste in order to understand what happens when people interact with food, both as individuals and in the most basic community concerning food: the meal community. Consequently, if the intention is to approach the interaction between people and food systematically, a **theory of taste dimensions** should be included as part of food education (Wistoft & Qvortrup, 2021). We take inspiration from a model of seven dimensions of taste developed by Wistoft & Qvortrup (2019). Each of the dimensions of this taste system is inspired by a broad range of philosophical, theoretical and practical input, including concepts from the philosophy of aesthetics (Kant, 1971 [1790]), health education and practice (Wistoft, 2009, 2013), science (Mouritsen & Styrbaek, 2014; Shephard, 2012), moral philosophy (Kant, 1973 [1788]), sociology of love (Luhmann, 1982), sociology of religion (Luhmann, 2000) and fashion theory (Schmidt, 1991). According to the system, taste can be divided into three subsystems: the biological/physiological, the mental and the social system with **seven dimensions** (Figure 2): 1) taste as *sensory impressions*, concerning the ability to distinguish – and substantiate – the difference between sensory impressions and expressions of what is being tasted; 2) taste as *deliciousness*, concerning the ability to distinguish – and substantiate – the difference between pleasant or delicious taste and the opposite, i.e., disagreeable taste; 3) taste as a question of *health*, concerning the ability to distinguish – and substantiate – the difference between food that tastes healthy or unhealthy, either with regard to well-being or nutrition; 4) taste as a *moral* phenomenon, concerning the ability to distinguish – and substantiate – the difference between the taste of what is morally justifiable or unjustifiable; 5) taste as a question of *love*, in the sense of care or



Figure 2. Seven dimensions of taste  
(Figure obtained from Wistoft & Qvortrup (2019).

seduction, i.e., whether the meal is prepared with love, and how to use meals for seduction; 6) taste as a *religious* phenomenon, where it has a transcendental dimension and/or evokes religious traditions, i.e. Christmas meals, Jewish kosher traditions or late meals in the Muslim Ramadan; 7) taste as *trendiness* where, e.g., New Nordic Cuisine gained impetus as a result of a growing focus on season, authenticity and *terroir*. The seven dimensions of taste enable systematic reflection (Wistoft & Qvortrup, 2019).

## **METHODOLOGY**

### **WP1 – ADMINISTRATION, COMMUNICATION AND DISSEMINATION**

WP1 performs project management, handles administrative tasks and coordinates communication. WP1 includes the following tasks: 1) data management, 2) financial management, 3) external communication (NFR, media, stakeholders), 4) project website management, 5) annual reports to NFR, 6) event and workshop support, and 7) risk assessment and management.

**Milestones:** two-day kick-off event (M1.1), two-to-three-day workshops twice a year (M1.2), midway seminar with stakeholders and network group (M1.3), midway seminar with scientific advisory board (M1.4), and TASTE conference (M1.5).

### **WP2 – TEACHING TASTE DIMENSIONS `INSIDE` CLASSROOMS**

The purpose of WP2 is to investigate teaching and learning related to taste in the subject FH in primary schools, and to investigate student and teacher perceptions of taste in a wider population. WP2 will collect data through observations of FH lessons in four schools in Norway and Denmark, respectively, (three observations per class, one class per school). Focus will be on how taste is communicated by teachers and students, how taste is taught and learnt, how taste is included in cooking activities, and which arenas are used when teaching and learning taste. To supplement the observation data, we will carry out two focus group interviews with FH students at each school, and in-depth interviews with one FH teacher at each school. The observation and interview data will be transcribed and analysed with NVivo with the seven dimensions of taste as the theoretical approach. We will perform both within and between country analyses.

WP2 will also collect data through anonymous electronic surveys (SurveyXact) targeting students and teachers. The target-specific questionnaires are based on prior research findings in WP2 and will create an overview of students' and teachers' perceptions of taste in general and in relation to FH. We will distribute the questionnaires via e-mail to the principals or the school administration at all primary schools in Norway (n=2220) and Denmark (n=1600) to reach primary school students in FH and their respective FH teachers. We will send reminders after two and four weeks. In addition, we will introduce the project and the questionnaires in relevant journals, on homepages and Facebook in Norway and Denmark. The questionnaires will be made available in different languages if necessary. We will use SPSS and Graph Pad for descriptive statistical analyses and consult a statistician for the most advanced analyses (correlation and regression analyses). We will perform both within country and between country analyses.

**Milestones:** observation and interview guides and pilot studies (M2.1), data collection: observations and interviews (M2.2), transcription of observation and interview data (M2.3), questionnaire and pilot of survey (M2.4), collection of survey data (M2.5), draft papers (M2.6)

**Deliverables:** three scientific papers (D2.1), conference papers (D2.2), and popular science articles (D2.3), and PhD thesis and dissertation (D2.4).

### **WP3 – TEACHING TASTE DIMENSIONS OUTSIDE CLASSROOMS**

In WP3, the focus is that teaching in the subject FH can also take place outside the classroom. The empirical study design is similar to WP2, but with use of an outdoor learning arena. WP2 will collect data through observation and focus group interviews. We refer to WP2 for details on methodology. However, in WP3 we will recruit four schools in the western part of Norway. All have fifth-seventh grade classes that use outdoor learning arenas in some of their FH education.

**Milestones:** observation and interview guides and pilot studies (M3.1), data collection: observations and interviews (M3.2), transcription of observation and interview data (M3.3), questionnaire and pilot of survey (M3.4), collection of survey data (M3.5), draft papers (M3.6).

**Deliverables:** three scientific papers (D3.1), conference papers (D3.2), popular science articles (D3.3) and PhD thesis and dissertation (D3.4).

#### **WP4 – TASTE DIMENSIONS AND FOOD CHOICES IN KINDERGARTENS**

The purpose of WP4 is to explore how different dimensions of taste appear in everyday life in kindergarten. We aim to explore children's own reflections and meaning-making in connection with taste and food choices and how these are connected to the taste dimensions. WP4 builds on our previous research regarding children's food choices in kindergarten, and the social and structural influences on these food choices (Wergedahl et al., 2021; Fossgard et al., 2016; Aadland et al., 2014). We aim to recruit four kindergartens with at least two departments each and with children aged 1-5. WP4 will collect data as follows: 1) daily investigation of meals and food-related activities (e.g. growing/harvesting, cooking, meal preparation, etc.) for one week in each kindergarten, collected through video observations of meals and food-related activities, accompanied by field notes, 2) two focus group interviews with teachers at each kindergarten and 3) five informal (although guided by a topic list) 10-minute group conversations with three children aged 4-5 in each kindergarten. The focus will be on taste perceptions, food choices, social construction of taste experience and teachers' reflections on their pedagogical practice regarding taste. The data from video observations, conversations and interviews will be transcribed and analysed in NVivo.

**Milestones:** observation and interview guide and pilot studies (M4.1), data collection: observations and interviews (M4.2), transcription of observations and interviews (M4.3), collection of survey data (M4.4) and draft papers (M4.5)

**Deliverables:** min. two scientific papers (D4.1), conference papers (D4.2) and popular science articles (D4.3).

#### **WP5 – DEVELOPMENT AND IMPLEMENTATION OF TASTE DIDACTICS TO DEVELOP CRITICAL TASTE COMPETENCES IN SCHOOLS AND KINDERGARTENS**

The purpose of WP5 is to develop *didactical approaches* for teaching and learning about food and meals as a gateway to critical taste competence. We will conduct *participatory research activities* in four FH teaching kitchens, four outdoor arenas in Norway and Denmark, and in four kindergartens in Norway based on research findings from WP2-WP4 and in dialogue with stakeholders. We will develop a taste pedagogy that leaves room for the child and non-externally managed taste experiences through cooking and common meals. The aim is not to make students eat something specific; rather, WP5 aims to make students aware of their own capacity for taste and enable them to make informed and reflective food choices. This will be the basic guiding principle for the experimental, development-oriented taste didactical teaching laboratories. Taste experiences also relate to being allowed to be oneself, be creative and try new things – alone or together with others, which forms the basis of the taste didactical development and implementation. Participatory research activities, process evaluation and refinement will take place over a period of six months in each arena. Further experiments with the developed taste didactics will then be carried out in the schools and kindergartens over a period of six months. WP5 will collect four observations in each school/kindergarten during the development/refinement period and likewise during the implementation period. Two focus group interviews with children and one individual interview with teachers at each school/kindergarten will be carried out by the middle and the end of the development/refinement period, respectively, and after the further experimentation period.

**Milestones:** teaching taste laboratories/participatory research to invent and refine didactical approaches (M5.1), data collection: observations and interviews (M5.2), transcription of observations and interviews (M5.3) and draft papers (M5.4). **Deliverables:** min. two scientific papers (D5.1), conference papers (D5.2) and popular science articles (D5.3).

Risk assessment and risk mitigation measures: 1) Motivating school and kindergarten teachers to participate in TASTE can present a challenge due to their hectic schedule. It may also prove a challenge to recruit enough children from each school/kindergarten. We will therefore engage in dialogue with teachers and attend parent meetings to promote the project. 2) How the teaching staff utilises the didactical approaches may differ between schools/kindergartens. Involvement in the development of the didactical approaches, standardised information through meetings, regular follow-up conversations and an information package will guide the adaptation to the developed didactical approaches. 3) Most of the participating children should be present during data collection. We will schedule data collection in the schools/kindergartens in advance and allocate time in the schedule for possible follow-ups in case of sickness or other unforeseen events. 4) The quality of ingredients for the lessons/activities is important. Possible challenges to upholding low costs will be addressed. 5) The current global pandemic needs to be taken into consideration in the risk assessment. Digital meetings, online conferences and qualitative data collection in our geographic proximity are mitigation measures for the Covid-19 risk.

Gender perspectives: Gender differences in behaviour, attitudes and experience related to taste is an unexplored area. However, there is evidence to support that there are gender differences in e.g., food preferences and the courage to taste (Leer, 2016; Nielsen et al., 2020). Thus, gender perspectives need to be taken into consideration. To do so, we will explore gender differences in sub-group analyses of the results, which may contribute to shed light on and further the acceptance of differences in taste preferences between genders.

Ethical issues: Data collection only by statements of consent. Information will be provided for the children and their parents in a language and format they understand. We will pay close attention to children who may have difficulties expressing their consent during activities, and we will withdraw from data collection if a child shows any sign of discomfort. Parents and children may feel pressured to consent due to their relationship with the institution, and parents may be concerned that the child is excluded from lessons/activities. We will ensure parents that all children can attend lessons/activities concerning taste didactics, and that the only difference between attending and non-attending children is the collection of data during activities and participation in interviews. All research activities will take place in accordance with recognised ethical standards and research guidelines. We use the archiving solution Research Server at the Western Norway University of Applied Sciences (HVL) to store research data.

Stakeholder/user knowledge: Teachers at schools and kindergartens will take part in the development of the didactical approaches, and children's and parents' voices will also be taken into consideration. Furthermore, a stakeholder advisory board will support and provide advice on the project.

### **1.3 Novelty and ambition**

The uniqueness of TASTE is the combination of a novel knowledge base on critical taste reflection and competences, innovative didactical approaches to be implemented in teacher practices in FH and kindergartens – contributing to fulfilling the curriculums – and `framework plans` and new didactical perspectives on taste. We view taste as an important reasoning tool in the encounter with the world. Such a didactical approach is radically different from the one represented by the reviewed literature (Christensen & Wistoft, 2016). Previous research on food and taste education has predominately employed a reductive understanding of taste, viewing it as a barrier to the adoption of 'correct' eating habits (Leer & Wistoft, 2015), which leads to an overemphasis on the hegemonic nutrition perspective (Hayes-Conroy & Hayes-Conroy 2013). TASTE sets out to fill significant gaps in empirical research on taste dimensions beyond the physiological sense of taste. The first part of TASTE (WPs 2-4) focuses on how taste is used and expressed in FH education and during meals and pedagogical food activities in kindergartens, while the second part (WP5) aims to develop and contribute novel didactical approaches to taste education in practice, as well as making a significant contribution to taste theory. TASTE will be the first project of its kind to conduct extensive quantitative surveys on the different taste dimensions (WP2).

The novelty of TASTE lies in a didactical approach with a strong focus on teaching based on reflection and validation, where the aim is for children to develop personal competences and confidence so they can make informed and critical food choices. We will include children in a reflective process with an eye to the meaning and importance of taste as well as the aesthetic, cultural and social dimensions of taste. It will require novel scientific methods and designs to measure the effect of this form of teaching and learning. In addition to a recent study by our research team (Christensen & Wistoft, 2016), TASTE is the first of its kind to include such a child- and taste-centred didactical approach in school and kindergarten—in and outside the classroom. This underpins the need to develop a taste didactic that leaves room for the child and the development of their own taste experience and 'sensus communis' (Wistoft & Qvortrup, 2021), i.e., taste in community with others. TASTE will continue this effort. Our aim is *not* to make children eat something specific; instead, with an innovative didactical approach, TASTE aims to make children aware of their own capacity for taste and enable them to make informed and reflected food choices. The ambition includes empowering and motivating children to become reflective, conscious citizens who are capable of critical thinking and able to participate in shaping a sustainable future. Pedagogical approaches in and outside the classroom that are adequate to this ambition are learner-centred, action-oriented and transformative.

## **2. Impact**

### **2.1 Potential academic impact of the research project**

TASTE will have academic impact on the knowledge base of taste education by providing crucial new research on food and taste education and critical taste competences. TASTE goes in a different direction than prior

studies, which have focused on taste education as a mean to modify children's eating habits with the aim to improve their health (Leer & Wistoft, 2018). The project develops the research on children's taste education and critical taste competences. The outcomes will be useful to future studies in this didactical research field. The focus on novel didactical approaches to taste education responds to calls for research in prior studies, concluding that children must be included in a more reflective process (e.g., Hayes-Conroy & Hayes-Conroy, 2013; Jonsson et al., 2005; Christensen & Wistoft, 2016; Wistoft & Qvortrup, 2019). However, these studies have not drawn the corresponding didactical conclusions.

Researchers involved in TASTE will benefit from collaborations between research groups in Denmark and Norway, including mobility and co-publications. This, in turn, is expected to result in long-term impact, such as stronger research environments regarding taste, increased research quality and more research-based teacher education in Norway and internationally. We also expect TASTE to result in an *international scientific network* through networking with Professor Miho Kawamura (Faculty of Education, Saitama University, Japan), Professor Franziska Honegger (Vice-President of the International Federation of Home Economics, Region Europe/EAHE) and Scandinavian researchers including the Danish Academy of Food Knowledge Didactics, the Norwegian Federation for Food and Health in School, the Sensory Study Group and the Kindergarten Knowledge Centre for Systemic Research on Diversity and Sustainable Futures (KINDknow). The expected impact of this network is that it will advance the research field by sharing insights and learning from related international and Scandinavian research, result in co-publications and new joint research projects, and strengthen the nascent professional networks of the PhD student and the postdocs, who will contribute research within general education and food and taste specifically. In that sense, TASTE will also contribute to career development.

## **2.2 Potential societal impact of the research project**

One societal impact of TASTE is the development of children's critical taste competences. We are seeking to qualify the aspect of taste from a sociological standpoint. The judgement of taste is built on a shared sense of respectability, and this includes different dimensions of taste; i.e., what we learn in taste communities is valid and relevant everywhere in society. The basic idea of TASTE is that it will empower children to make critical judgments concerning food and taste. Instead of just learning what is right and wrong in relation to food and taste, children will learn to use their own senses, knowledge and skills in order to act as responsible citizens (UNESCO, 2017). Our project is highly relevant for the ESD goals and SDG#4 (*quality education*). Critical teaching and learning in kindergarten and school are important for gaining a more eco-centric perspective and achieving a sustainable society. It is important to stress that emphasis in the project is on stimulating children's critical thinking and informed choices. This means that references to the sustainability discourse and eco-centric perspective do not imply that taste should serve as a driver for a new 'moral' discourse - similar to the hegemonic understanding of nutrition criticised above. The point is not to teach children 'correct' taste but to encourage them to explore their own taste and choices on an informed and reflected basis. Participatory and experimental teaching are crucial parts of our research project, and we aim to educate future generations in ways that encourage them to reflect critically and make informed choices for a sustainable society. This project views it necessary that researchers, teachers in schools/kindergartens and stakeholders work together in a *partnership* to share knowledge, expertise and experience in order to promote capacity-building and achieve the goals set by the UN (SDG#17). In line with SDG#3, ensuring *health and wellbeing*, TASTE promotes the interdisciplinary topic Health and Life Skills (Norwegian Directorate for Education and Training, 2020). TASTE will demonstrate a way in which taste can be didactically reflected upon and described, which is important in the context of health promotion and sustainable food choices in future generations. The long-term impact could potentially reduce pressure on healthcare systems through reduced non-communicable diseases due to healthier diets, as well as having a positive impact on climate change and food sustainability. The critical reflection skills achieved as an outcome of TASTE will also be relevant for the children in other aspects of life, presently and in the future. Such a reflective pedagogy would help develop children's agency in their approach to food and their social competences. The results of TASTE will be of relevance to policy makers; pedagogical practices in FH, kindergarten meals and food-related activities; and teacher education. We aim to contribute to a research-based, taste-didactical practice. Another societal impact is the potential for a research-based vocabulary of taste to strengthen the professional communication of food and taste among teachers and stakeholders. Practitioners will participate in designing and experimenting with taste-didactical approaches. Such involvement will ensure that the research results have immediate user value as well as a long-term impact.

### 2.3 Measures for communication and exploitation

Target audience: Results from TASTE are relevant to academic communities in taste education, FH, food and meals in the kindergarten, and teacher education. They are also relevant to non-academic communities such as FH practitioners at schools; kindergarten teachers engaged in meals/activities involving food; policy makers involved in knowledge-based decision-making on FH curricula and the kindergarten framework plan; and the children themselves as end-users.

Communication and dissemination plan: The **academic community** will be reached through scientific articles in international peer-reviewed journals, conference participation and a project website. We aim to deliver at least 10 scientific articles, 1 PhD dissertations and a number of conference presentations. Research results are to be made accessible through sharing and publication in line with the Research Council's Policy on Open Science. Relevant level-2 journals are *Childhood*, *European Journal of Education* and *Scandinavian Journal of Educational Research*, and relevant level-1 journals are *Nordic Studies in Education*, *Journal of Outdoor and Environmental Education*, *International Journal of Home Economics* (not an open-access journal but the major international journal on FH) and *Acta Didactica Norden*. Relevant conferences are *International Federation of Home Economics World Congress*, *International Society for Teacher Education Seminar* and *OMEP World Assembly and Congress*. We will host an international research conference by the end of the project (Teaching TASTE conference). We regularly host research group seminars, and we will communicate project results within this research group. Project participants (PIs) in the research group are closely linked to teacher education (FH teachers and kindergarten teachers), and results from the project will be further communicated to teacher education (FH) and kindergarten teacher students. **Stakeholders and policy makers** are reached through the publication of at least 2 popular science articles annually in relevant journals or on web pages for practitioners (e.g. *Mat og helse i skolen*, *Barnehagefolk*, *Barnehage.no*, *National Centre for Food, Health and Physical Activity*); popularised presentations at conferences/seminars for practitioners (e.g. the *National FH Conference*); text on social media (e.g. Facebook pages like *Mat og helse i skolen*, *Mat og helselærere – vi deler undervisningstips*); outreach to policy makers on *Twitter* and online evidence bases; debate/features in newspapers; and the project website. We will be in direct contact with practitioners through collaborations on the development and testing of the didactical approaches. The **general public** will be reached through communication of the project and its results at the project website and knowledge-based contributions in debate/features in newspapers, online evidence bases (e.g., *Gapminder*) and on social media.

Exploitation plan: We will utilise the knowledge, methodology and networks resulting from this project in further research activities and as part of academic career building for the project participants. Results from the project will strengthen the expertise on food and taste education in teacher education, and the project will recruit Master's students at HVL and partner institutions. Results will be exploited in schools and kindergartens involved in the project. The results will also be relevant to education policy, defining new standards and didactical methods for taste didactics, thereby facilitating exploitation by future citizens.

## 3. Implementation

### 3.1 Project manager and project group

**Associate Professor Eli Kristin Aadland** (HVL) manages the TASTE project. She has profound experience as a researcher and lecturer for teacher students in FH and outdoor learning at HVL. The close collaboration with primary schools, and especially HVL's partner schools, has resulted in several joint projects and experiences in which students' participation, creativity, taste and active learning have been central. Aadland is head of the *National Association for Teachers in Food and Health* ([www.matoghelse.org](http://www.matoghelse.org)). Together with Wergedahl, she leads the research group *Food and meals in schools and kindergartens*. **Professor Hege Wergedahl** (HVL) has expertise in food and meals in kindergartens and schools and research experience from studies on FH. Wergedahl is affiliated with the *KINDknow* Centre, located at HVL, and manages a WP on sustainable and health promoting aspects of kindergarten meals at the *KINDknow* Centre. Wergedahl has managed several research projects and WPs, and she has completed a research management course. **Professor (mso) Karen Wistoft** (Danish School of Education (DPU)) has expertise in learning, cooking, tasting and well-being in school. Her research interests revolve around a new and highly innovative pedagogical and educational research environment dealing with students' taste, food knowledge and skills, and well-being and learning in primary school. Her research is affiliated with the *National Centre for School Research* and the



Danish Academy of Home Economics Education. **Professor Bjørg Oddrun Hallås** (HVL) has experience in outdoor learning, both through research and teaching. Her research on formation, nature, body and movement has an interdisciplinary profile and is connected to different didactical practices both in schools and teacher education. **Associate professor Susanne Moen Ouff** (University of Southeast-Norway, USN) has experience in teaching FH at primary level in classroom contexts, outdoors and outside the formal school context, i.e., museums and school camp. She is a researcher and lecturer for teacher students in kindergarten and school (FH) and has broad research and project management experience. The **PhD student** and **postdocs** will have a background in teacher education and competence in FH or food and meals in schools/kindergartens.

### 3.2 Project organisation and management

Table 1. Work plan – the project will follow the schedule outlined in the Gantt chart

	2023		2024				2025				2026				2027	
	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2
<b>Events (WP1)</b>																
Kick-off event																
Workshops																
Midway seminar (stakeholder and scientific advisory boards)																
TASTE conference																
<b>WP2, WP3 and WP4</b>																
Study design and pilot testing																
Qualitative data collection																
Qualitative data analyses																
Quantitative data collection (WP2)																
Quantitative data analyses (WP2)																
Scientific and popular science articles																
Presenting at conferences																
<b>WP5</b>																
Teaching taste laboratories/participatory research activities to invent didactical approaches																
Process evaluation and refinement of didactical approaches																
Implementation of didactical approaches																
Data analyses																
Scientific and popular science articles																
Presenting at conferences																
<b>PhD and postdocs</b>																
PhD project period (100%)																
PhD dissertations																
Postdoc1 period																
Postdoc2 period																

1: Jan.-March; 2: April-June; 3: July-Sept.; 4: Oct.-Dec.

#### Allocation of tasks:

The TASTE project will be led by Aadland. WP1 will be led by Aadland with Wistoft and Wergedahl as core participants. All other PIs will be involved. Aadland will initiate the kick-off seminar and workshops, as well as manage stakeholder and scientific advisory board meetings. Wistoft will manage the TASTE conference. All other PIs will be involved in these activities. WP2 will be led by Wistoft. The other PIs involved are postdoc1, Ouff and Aadland. Postdoc1 will carry out baseline observations and interviews in FH lessons, including analyses, in collaboration with all PIs. Postdoc1 will also carry out the survey and statistical analyses. Wistoft will be the contact person for the schools involved in Denmark, and Ouff and Aadland will be the contact persons for the schools involved in Norway. All PIs in WP2 will take active part in planning and follow-up on the project and be involved in the documentation and reporting of the outcomes. WP3 will be led by Aadland. The other PIs involved are the PhD, Wistoft, Ouff and Hallås. The PhD will carry out baseline observations and interviews with FH students and teachers in an outdoor learning arena, including analyses,

in collaboration with all PIs in WP3. Wistoft will be the contact person for the schools involved in Denmark and Aadland will be the contact person for the schools and the Master's students from HVL involved in the project. Hallås will contribute with expertise on outdoor learning as a method. All PIs in WP3 will take active part in planning and follow-up on the project and be involved in the documentation and reporting of the outcomes. WP4 will be led by Wergedahl. Postdoc2 will carry out baseline observations and interviews in the kindergarten, including analyses, in collaboration with Wergedahl. Both PIs will take active part in the documentation and reporting of the outcomes. WP5 will be led by Aadland. Wistoft and postdoc1 will conduct the research in Danish schools; Aadland, PhD, Ouff and Hallås will conduct research in Norwegian schools, and Wergedahl and the postdoc2 will conduct research in kindergartens. All PIs will be involved in the documentation and reporting of outcomes.

PhD student and postdocs: Wistoft will be the supervisor for postdoc1 (WP2), Aadland will be the main supervisor for PhD (WP3) and Wergedahl will be the supervisor for the postdoc2 (WP4).

Dissemination: Aadland, Wistoft and Wergedahl will take main responsibility for the dissemination of the project results and promotion of the utilisation of new knowledge, with input from all other PIs.

**Research infrastructure:** The project will be integrated into the FH/Food and Meal educational research environment at HVL and into the Taste and Learning research environment at DPU, drawing on the research and teaching skills of the staff. The project uses the premises of the two universities in the form of teaching rooms (incl. kitchens), libraries and IT infrastructure. An integral part of the project is the partnership between HVL and primary schools and kindergartens. The project uses the premises of the participating schools' teaching environments, classrooms and outdoor areas and the participating kindergartens' indoor and outdoor environments. The project is supported by the administrative staff of HVL and DPU. Responsible for the PhD and postdoc2 recruitments is HVL, while DPU is responsible for the postdoc1 recruitments. We aim to include Master's students at HVL (Master in Teacher Education with FH, Master in Didactical Practices with FH and Physical Education, Master in Kindergarten Knowledge) and DPU (Master in Didactics). Postdoc 1 will be employed at DPU, and the postdoc 2 will be employed at HVL. The PhD will be employed and enrolled in the PhD programme at the Faculty of Education, Arts and Sports at HVL.

**Organisation and management:** The organisation is based on research collaboration between HVL, DPU and USN. The internal project groups will meet once a month. All participants will meet twice each semester (digital meetings or physical workshops at HVL/DPU). Managers of the WPs will form a management group that regularly assesses the progress of the project, PhD and postdocs, collaboration with the involved schools and kindergartens, deliverables and achievement of milestones. They will also manage decision-making and conflict resolution and identify and mitigate potential risks. Supervisors will meet with the PhD student/postdocs once a month, and the management group will facilitate collaboration between the PhD student/postdocs. We will consult a statistician for statistical analyses. A **scientific advisory board** will support the academic work of the WPs. It consists of *Professor Miho Kawamura* (Faculty of Education, Saitama University, Japan) with expertise in research on home economic education, *Associate Professor Erik Mygind* (Faculty of Science, University of Copenhagen, Denmark) with expertise in education outside the classroom, *Associate Professor Kristi Marie Jegstad* (Faculty of Education, OsloMet, Norway) with expertise in critical thinking skills in education, and *Professor Nanna Lien* (University of Oslo, Norway) with expertise in child nutrition. A **stakeholder advisory board** will provide input to the WPs about the needs of different participants. It consists of representatives from a) the [National Centre for Food, Health and Physical Activity](#), which will advise the project with user knowledge at a national level; b) the [Taste Workshop](#) (In Norwegian: Smaksverkstedet), which will advise the project with user knowledge (children/youth) and experience with activities aiming to enhance the food and taste competence among children/youth; and c) [Taste for Life](#), a Danish nationwide research and communication centre focusing on taste education, sustainability, food quality and the senses. Taste for Life involves researchers from different scientific disciplines, educators from preschool to university level and chefs. Taste for Life will inform TASTE with wide experience in learning and teaching activities related to developing taste competences among children; user knowledge; interdisciplinary research knowledge on sensory sciences and didactics; gastrophysics and the integration of scientific disciplines; and the development of culinary skills.

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