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Learn4Health
Scientific publication (1)

Learn4Health
- A European project creating health and food literacy through innovative interdisciplinary teaching and learning methods.

IISES
INTERNATIONAL INSTITUTE
OF SOCIAL AND ECONOMIC SCIENCES

4th Teaching & Education Conference, Venice

Venice International University

UNYP
UNIVERSITY OF NEW YORK IN PRAGUE

Anna Marie Fisker
Katja Seerup Clausen

Publication (P1): Learn4Health, an European project creating health and food literacy through innovative interdisciplinary teaching and learning methods

Published in Proceedings of the Proceedings of the 4th Teaching & Education Conference, Venice, May 2017, pages 53-59

Abstract

Research documents what educators know: Healthy pupils and students are better prepared to learn (Kristjánsson et al., 2010; KL, 2015). This paper focuses on the thesis that innovative practical methods for learnings related to health and food issues create a rewarding educational experience for pupils and students while meeting academic standards in math, reading, science, social studies, art, music and more. For this reason and many more, we created Learn4Health, a project with interdisciplinary roots. Every day, in Universities across the globe, courses are being created to embrace blended learning approaches. Classes are now being developed with focus on more effective learning and better student outcomes (Jones, 2016). However, the concept of blended learning between higher educational institutions and public schools is relatively new. This paper outlines an exploratory study of blended learning initiated by Learn4Health, an Erasmus+ Strategic Partnership including twelve partners in total, representing 6 European countries (DK, ES, SI, NL, UK and LT). Each country is represented by one higher educational institution and one primary and/or secondary school. With point of departure in the globalized food systems consumers, especially children, being increasingly disconnected from understanding how and where their food is produced, the paper provides an overview of the development and expected implementation process of a new blended learning programme. The practical methods discussed are problem based learning, an experimental approach to learning involving hands on/learning by doing approach, and an "open school" approach reaching out to local community enterprises and farms. Another Learn4Health key tool to be addressed in this paper is foodscapes, a multi-valenced concept centered around food environments. Finally, Learn4Health is about having fun and developing lifelong food literacy skills to understand the nature of food and our own impact as consumers and citizens on

health status, environment, social and economic factors. Literacy is the cornerstone of the project, and we will thus discuss the concept's relevance and impact on health in relation to Learn4Health.

Keywords: Learn for health, food literacy, school gardening, interdisciplinary teaching and learning methods, innovative school foodscapes

JEL Classification: 100, 129, P36

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1 Making Healthy Habits Part of How Kids Learn

In the globalized food systems consumers, especially children, are increasingly disconnected from the understanding of how and where their food is produced. This has an impact on eating habits and food choices that might affect health, the environment, agriculture and other ethical dilemmas such as animal welfare and fair trade (Dyg, 2014). In this optic, outdoor activities, i.e. gardening, may connect children closer to nature by teaching them to take care of living things and by understanding the connection between nature and food. This is, however, not something that happens easily nowadays. The tendency is that children spend more and more time indoors in front of a TV or a computer screen, and the generally hectic work schedule in the family are all cutting into outdoor time (Gunter and McAleer, 2004) Relations to nature, to gardening and to growing food may increase the intersection between the natural world and humans. It is an environment where children can interact with and get curious about the natural world. Mini farms and small gardens in a school context are a strategic way to start. School gardens can facilitate and support interactive learning. How trite it may sound, spending time in the school garden provides children with valuable knowledge of where food comes from and the experience of tasting and eating fruit and vegetables they have grown themselves. Mini farms and small gardens in a school context is a strategic way to start. Farm visits and collaboration between farmers and teachers through the school are another valuable steps that can enable children to evolve a fundamental understanding and potential interest in how food is produced, the nature of agriculture and a relationship with the farmer, as an authentic teacher and expert.

One example of research within this subject is a Danish Ph.D. study carried out by Pernille Malberg Dyg (2014) that investigates various farm-school cooperation arrangements and the motivation, learning goals and values among farmers and teachers working together to promote children's understanding of food, nature, agriculture and sustainability. Based on four case studies and a review of Danish educational materials related to food, agriculture and sustainability, Dyg (2014) concludes that there is a connection between the motivation of farmers and teachers and the way in which they collaborate, i.e. how closely they collaborate. She furthermore concludes that farm-school collaboration and related teaching can contribute with perspectives on food, agricultural and ecological literacies and food citizenship (Dyg, 2014: pp.235-236). The question is now if the learning environments can create other possibilities for building up the children's food literacy? We have an agenda trying to answer this question in a new European Strategic Partnership called Learn4Health. Learn4Health is an innovative professional development program that through a 2-year project period has the aim to create health, food and nutrition literacy through innovative approaches to provisioning and learning about food for the benefit of young people across Europe. This will in some cases/events involve innovative designs for gardens, equipment, tasting sessions, food events, and more.

2 A Problem Based Learning and Interdisciplinary Approach

Learn4Health focuses on learning for primary and secondary school pupils and their teachers using a problem-based learning approach. The practical methods applied are an experimental approach to learning involving hands on/learning by doing including garden to table aspects and training, and an open school approach reaching out to local community enterprises and farms. Problem based learning is a highly nationally and internationally recognized study method widely utilized at Aalborg University. Basically, problem-based learning is a method to organize the learning process in such a manner that the pupils/students are actively engaged in finding answers themselves (Graaf and Kolmos, 2007). According to MSO Erik de Graaff and Professor Anette Kolmos (2007) from Aalborg University, problem based learning is defined by open-ended and ill-structured problems that provide a context for learning. Since individuals cannot be expected to solve such complex tasks by themselves, interdisciplinary group efforts are involved (Graaf and Kolmos, 2007: p.4). Learn4Health is dedicated to this method and aims at developing basic and cross disciplinary skills, digital skills, engineering and entrepreneurial skill as well as language skills qualifications all using food, eating, health and nutrition as its underlying learning occasion. Learn4Health uses innovative pedagogical approaches, as previously mentioned problem based learning, but also whole school approach, student centered supportive learning, open school, supportive learning, intergenerational learning and co-creation, and is based on an evidence and research based

approach to knowledge creation. This means that all interventions and activities in Learn4Health are investigated with validated methods. Learn4Health has special emphasis on creating inclusion across social and ethnic barriers by using learning about the everyday life topic of food and eating as the pivotal point.

3 Innovative School Foodscapes In the context of Learn4Health, it is essential and relevant to talk about foodscapes, simply because the project is carried out in various foodscapes such as school foodscapes. Furthermore, school meals have been acknowledged as a special situation where learning about food and nutrition occurs (Osowski, Göranzon and Fjellström, 2011; Nahikian-Nelms, 1997; Gullberg, 2006; National Food Administration, 2007; Lintukangas, 2009). Thus, Learn4Health focuses on the theme innovative school foodscapes for future primary and secondary schools. The concept of foodscapes originated in the field of geography (Aldrich, 1966) and "… represents a marriage between food and landscape, both the conceptual notion of landscape and actual, physical landscapes" (Adena, 2006: p.13). Like landscapes, foodscapes can refer to physical and tangible spaces, however, they can also refer to intangible associations between places and food(s) (Adena, 2006). Furthermore, foodscapes include people and the complex interrelationship between food, place and people (Mikkelsen, 2011). Foodscapes are thus a multi-valenced concept centered around food environments: Spaces meant for acquiring, preparing food, and talking about food, or generally gathering some sort of meaning from food (MacKendrick, 2014). The idea of foodscape is widely used in urban studies and public health to refer to urban food environments (MacKendrick, 2014). In the field of sociology, the notion has been extended to include cultural spaces and discourses that mediate our relationship with our food and institutional arrangements (MacKendrick, 2014).

Learn4Health will be unfolded in school foodscapes across Europe involving workforce development for teachers both in schools as well as train-the-trainer teachers from higher educations. This will contribute to the development of the credibility of the primary and secondary teacher professions and strengthen the role of school teachers in the future knowledge societies. It will at the same time contribute to the advancement of research in healthier and more sustainable school foodscapes. By integrating innovative tools and designs for learning and experimenting in specific school foodscapes, Learn4Health will strengthen the future role of subjects related to food and health in primary and secondary schools.

4 Foodscapes as Driver for the Strategic Partnership

How to utilize foodscapes as the main driver for Learn4Health? Assistant Professor at the Department of Media and Culture Studies at Utrecht University, Dr. Rick Dolphijn, in our opinion, elucidates the

intangible side of foodscapes rather well: "[Foodscapes are] how food functions in immanent structures that are always in a process of change […] how food affects and is affected […] how we live our lives with food, according to food, and through food […] what happens between the eating and the eaten" (Dolphijn, 2004). As pointed out by Dolphijn (2004), our lives are affected by food, according to food, and through food, and what happens between the eating and the eaten. We could state and add "between the eaters".

With point of departure in the concept of foodscapes, we will carry out various projects and events of which some will be new, build upon experiences, and others already existing. The plan is to design and develop foodscapes involving and activating children, and thus the foodscapes will become drivers for the project.

How to carry Learn4Health into action in practice? The development of the blended learning programme will be structured in three steps. Firstly, a hands-on food activities list (HOFA list), comprising several already existing and/or planned relevant instruments developed by the individual partners, will be produced. The list will include results of field tests, impact on eating patterns, academic achievements and feasibility, which is vital for common inspiration and transferability. Secondly, new and additional hands-on food activities with high feasibility in a broad range of cultural and national contexts will be designed and developed. This is an action, which will comprise hands-on workshops in the participating countries. Thirdly, the appointed instruments will be merged/adjusted to form the basis for a final hands-on manual (the HOFA catalogue of ideas) for designing and implementing projects. Each partner is responsible for implementing relevant projects and activities. The partnership monitors the activities carried out among the partners, and makes sure that results and curricula are available internally and externally, and thereby providing a high level of transferability. Furthermore, publishing and dissemination will be prepared, and a final evaluation will be conducted.

5 Literacy – an Important Tool for Learn4Health

As previously mentioned, Learn4Health is concerned with developing lifelong food literacy skills to understand the nature of food and our own impact, as consumers and citizens, on health status, environment, social and economic factors. The concept of literacy is the cornerstone of the project, and we will here discuss the concept's relevance and potential impact on health. The idea of 'literacy' is increasingly used in a much wider sense than in its original meaning related to the ability to read and write. It is taking on numerous forms and fields of knowledge: each of which is an integration of different values and ways of thinking, acting and interacting. This ranges from individual literacies (in various

fields e.g. reading, science, nutrition, and health) – often either implicitly or explicitly equaling individuals to consumers – to what Cardwell (2005) defines as 'citizen levels of literacy' (Dyg, 2014; Cardwell, 2005).

As stated, the globalized food system, adults and children are becoming more and more removed from agriculture, food production and the knowledge about the process "from farm to table". This includes the complexity of knowing how, where and when food is produced and understanding the impact of production, processing, packaging, transportation, distribution, and consumption choices on the environment, health and farm economy. Loss of cooking skills and sensory abilities increase the consumption of highly processed foods, difficulties understanding food labels all pose challenges for public health. These challenges are observed with increasing obesity rates and other diet related health challenges (Dyg, 2014: p.7).

According to Dyg (2014) schools have long been viewed as a key arena for promoting healthy diets and a sustainable development agenda both within the food system, health promotion and environmental protection. Examples are farm-school collaboration in programs and research (sometimes combined with a local food supply) in the US, Canada, UK, Australia, Norway and Italy, which show several benefits in nutrition, learning and social and personal development and skills in children.

In Learn4Health we argue that to make use of this arena and induce food literacy, it is necessary to develop and design (school) foodscapes that facilitate this process. In our view, these foodscapes should involve the integration of farm-based and/or garden-based learning in the curriculum. This has not only the potential to increase school children's food knowledge and agricultural knowledge, studies also show the benefits of especially garden-based education on enhancing academic skills including science skills/aptitude and interest (Skelly and Bradley, 2007), as well as social competencies and personal development in students (Dyg, 2014; Skelly and Bradley 2007; Green, 2004, Waliczek et al. 2001; Horgan, 2010).

6 Potential Challenges for Learn4Health

A successful delivery of the vision of the project to optimize the level of food literacy among children depends on motivation and cooperation of the strategic partnership and its ability to tackle challenges such as cultural differences, resource inequalities, and political agendas. Furthermore, the ability and commitment to cooperate and the capability of working interdisciplinary are key. Considering that the starting point of each country involved in the project is dissimilar, we expect challenges when comparing the final results transnationally. However, we expect that the individual institutional results will be able to stand alone nationally.

Our expectations to Learn4Health are to create a 'knowledgescape' that relates directly to the selected and defined areas of competences by applying foodscapes as the driving force. This necessitates an insight and a coherent and holistic knowledge about foodscapes for all partners.

Learn4Health has a dedicated vision that involves developing both the vision and the creativity related to future foodscapes. These are actions and experiences, i.e. real experiences from participating individually or collectively in activities within a democratic framework, and by considering how barriers can be overcome. Hence, the project emphasizes the benefit of taking concrete action in the learning process.

7 Outline of Learn4Health

- Learn4Health is driven by the call for improving, changing and innovating the teaching and learning methods applied in the field of food issues in selected European schools.
- The aim of the project is to bridge the gap between teaching activities and food provision activities at schools. The co-creational approach rests on an involvement of children, teachers, caterers, researchers and local food businesses in its innovation efforts and problem based learning.
- The learning and teaching approach is founded in the use of real life food 'problems' as objects by which Learn4Health aims at promoting sustainable and healthy eating, and co-creating synergies between school and local/urban food economies.
- Learn4Health will develop innovative practical methods for learnings related to health and food issues creating an educational experience for pupils and students while meeting academic standards in math, reading, science, social studies, art, music and more.
- Learn4Health initiates an exploratory study of blended learning in innovative school foodscapes.
- Learn4Health will develop lifelong food literacy skills to understand the nature of food and our impact as consumers and citizens on health status, environment, social and economic factors.

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*Featured photo by **Arden Skole**.*

Learn4Health
Scientific publication (2)

The Mobile Sprout Wagon – An Innovative, New Approach to Improving Pupil's Health Through Interdisciplinary Hands-On Food Activities

41st International Academic Conference, Venice

Ca' Foscari
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THE MOBILE SPROUT WAGON - AN INNOVATIVE NEW APPROACH TO IMPROVING PUPIL'S HEALTH THROUGH INTERDISCIPLINARY HANDS-ON FOOD ACTIVITIES

Abstract:

In today's society there is a tendency that children are increasingly more and more detached and disconnected from the food they are eating; the origins of its components, and the process 'farm to fork'. This is an issue with wide-reaching consequences to health. In this paper we will seek to answer the questions: How is it possible to create new innovative and interdisciplinary teaching approaches, that enhances the pupils' understanding of food and a healthier lifestyle? And how can we develop interdisciplinary methods and learning tools that can be implemented as hands-on activities in multiple school subjects? To answer these questions we will introduce Learn4Health, an EU Erasmus+ Strategic Partnership with the aim of creating, strengthening and sustaining health, nutrition and food literacy among pupils in primary and secondary schools in Europe. We will discuss three of the projects created within Learn4Health, and their content, structure and use, and further, analyse their innovative and interdisciplinary approaches to the issues at hand. Next, we will highlight one of these projects, the mobile Sprout Wagon as a prime example. The Sprout Wagon, with its unique mobile construction provides pupils with hands-on learning contexts in multiple school subjects, placing food, nutrition and health on the schedule, and we will discuss how this new, innovative and interdisciplinary approach, can be used as an effective tool inside the classroom to support and facilitate learning in multiple school subjects.
Finally, on this background we will present the detailed instructional guides and teaching material which will be developed during the process of the Sprout Wagon and the other Learn4Health projects and which will all be included in the HOFA Handbook - an instructional handbook which will be freely available on the Learn4Health website at the end of the project period. This dissemination strategy will ensure that the insights, innovative approaches, knowledge and experiences will be shared across the borders, thereby securing sustainability of the project and creating wide-reaching impact – and, ultimately, happier, more food literate children.

Keywords:

Health, children, food, food systems, nutrition, problem-based learning

JEL Classification: I00, C90, D69

Introduction

Teaching children about food, health and nutrition is an essential part of not only securing the public health and wellbeing of future generations, but also to ensure a more balanced and sustainable environment and world. There is a tendency that children are increasingly more and more detached and disconnected from the food they are eating; the origins of its components, and the process 'farm to fork'. This is an issue with wide-reaching consequences to health.

Health is an individual state that every human possesses, yet it is individual at what stage each health is bound. According to the World Health Organization (WHO) "A healthy diet helps protect against malnutrition in all its forms, as well as non-communicable diseases (NCDs), including diabetes, heart diseases, stroke and cancer" (WHO 2015). In continuation, a healthy diet often equals a healthy state, which can be seen in relation to individual eating habits and choices. Research shows that eating habits and choices are established in our earlier years and with a continuing feeling of disconnectedness from food and the origin hereof, the habits and choices are seen to follow.

Consumers, and especially children, in the globalized food systems are increasingly disconnected from understanding both how and where their food is produced. The increasing lack of understanding about the origins of food, its production and processing, poses a challenge to public health, as it causes an increase in the consumption of highly processed food, and therefore increasing obesity rates and various diet-related issues (Dyg, 2014: p.7). Furthermore, the disconnectedness between consumer and food systems also affect the environmental awareness, and other ethical dilemmas such as animal welfare and fair, sustainable trading (Dyg, 2014) (Clausen & Fisker, 2017).

According to Dyg (2014), the school is an essential arena to address this knowledge gap; an ideal environment to nurture a connection and understanding between children and nature, a good context for promoting health and an understanding of food and food production. This has added benefits; research underpins and documents what educators already know: Healthy pupils and students are better prepared to learn (Kristjánsson et al., 2010; KL, 2015). It is on the basis of these issues, and on the understanding of the school as an essential arena that the *Learn4Health* project was started.

Learn4Health is an EU Erasmus+ Strategic Partnership with the aim of creating, strengthening and sustaining health, nutrition and food literacy among pupils in primary and secondary schools in Europe. Learn4Health seeks to educate young children about food and health, and to promote a better and broader knowledge of the origin of food, the food systems, and the environment, and thus, to be able to act on the basis of this knowledge, to create a healthier self and a better world. This EU Erasmus+ Strategic Partnership includes twelve partners in total, representing the 6

European countries; Denmark, Spain, Slovenia, The Netherlands, United Kingdom and Lithuania. Each country is represented by one higher educational institution and/or health organization, and one primary and/or secondary school.

Within the Learn4Health project there is great focus on the concept of *foodscapes,*a concept originated in the field of geography (Aldrich, 1966) interpreted like a concept that "… represents a marriage between food and landscape, both the conceptual notion of landscape and actual, physical landscapes" (Adena, 2006: p.13). Like landscapes, foodscapes can refer to physical and tangible spaces, however, they can also refer to intangible associations between places and food(s) (Adena, 2006). According to Mikkelsen (2011), foodscapes deal with the complex interrelationship between food, place and people.

The concept of foodscapes is therefore multivalent, understood as a concept centered around food environments, as spaces meant for talking about food, for acquiring, preparing and gathering some kind of meaning from food (MacKendrick, 2014). The concept of foodscapes is widely used in the fields of public health and urban studies to refer to urban food environments (MacKendrick, 2014). In sociology, the concept has been extended so that it includes cultural spaces and discourses that mediate our relationship with our food and institutional arrangements (MacKendrick, 2014).

In the Learn4Health context, it is relevant and essential to include the notion about foodscapes, as the project is carried out in various foodscapes such as school foodscapes. Furthermore, it is much acknowledged that especially school meals constitute a situation where learning about nutrition and food occurs (Osowski, Göranzon and Fjellström, 2011; Nahikian-Nelms, 1997; Gullberg, 2006; National Food Administration, 2007; Lintukangas, 2009). Based on this there is a focus on the theme innovative school foodscapes for future primary and secondary schools within the Learn4Health project. By integrating innovative tools and designs for learning and experimenting in specific school foodscapes, Learn4Health will strengthen the future role of subjects related to food and health in primary and secondary schools (Clausen & Fisker, 2017).

Every day, in Universities across the globe, courses are being created to embrace blended learning approaches. Classes are now being developed with focus on more effective learning and better student outcomes (Jones, 2016). However, the concept of blended learning between higher educational institutions and public schools, like within Learn4Health, is relatively new (Clausen & Fisker, 2017). In the Learn4Health project, the method of problem-based learning is broadly implemented; using food, health, eating and nutrition as underlying learning occasion with the aim of supporting the development of both basic and interdisciplinary skills, entrepreneurial, engineering and digital skills as well as language skills qualifications (Clausen & Fisker, 2017; Kofoed & Fisker, 2005).

Learn4Health uses innovative pedagogical approaches and as previously mentioned problem-based learning, but also whole school approach, student-centered supportive learning, open school, supportive learning, intergenerational learning and co-creation, and is based on an evidence and research-based approach to knowledge creation (Ibid.). This means that all interventions and activities in Learn4Health are investigated with validated methods. Learn4Health has special emphasis on creating inclusion across social and ethnic barriers by using learning about the everyday life topic of food and eating as the pivotal point (Clausen & Fisker, 2017). Learn4Health is about having fun and at the same time developing lifelong food literacy skills to understand the nature of food and our own impact as consumers and citizens on our health status, the environment, and on social and economic factors.

Focusing on Children and Health

In this paper, we will focus on the issues connected to children and health. Specifically, we will focus on the possibilities of new, innovative approaches, i.e. innovative and interdisciplinary teaching methods and learning contexts, aiming at teaching children about food, nutrition and health, and strengthening their understanding of the origin of food, and the structure of food production. We will begin with an overview of the most debated issues related to the topic of children and health, creating a frame from which we will identify some crucial focal points to engage with. This paper will seek to answer the questions:

How is it possible to create new innovative and interdisciplinary teaching approaches, that enhances the pupils' understanding of food and a healthier lifestyle? And how can we develop interdisciplinary methods and learning tools that can be implemented as hands-on activities in multiple school subjects?

Based on this, we will discuss three of the projects created within Learn4Health, and their content, structure and use, and further, analyse their innovative and interdisciplinary approaches to the issues at hand. Next, we will highlight one of these projects, the mobile *Sprout Wagon,* and discuss its new, innovative and interdisciplinary approach, and how it is used as an effective tool inside the classroom to support and facilitate learning in multiple school subjects. Furthermore, we will discuss the wide applicability of the Learn4Health projects, specifically the Sprout Wagon, by introducing the HOFA Handbook; an instructional guide to the featured projects, which will be made available for schools across Europe as the final product at the end of the Learn4health project period.

Disconnected from food

In an institutionalised world where children spend most of their day in school and away from home, the meal, and food in general, has changed as well. In continuation hereof, the availability of processed and fast food has increased in regards to the food demands children and parents require in the everyday life. The supply and demand of food has changed, and the food service sector is following readily, fueled by their own interests. We are convinced that this has a negative effect on children's perception of food and creates a disconnect between them and the understanding of food as well as 'farm to fork'.

It is our thesis that getting children back to the roots and teaching them about the origin of food, could create awareness in regards to health, nutrition and environment, in order for the children to act upon this knowledge in a beneficial and healthier way than currently.

Another important issue to focus on is the worldwide increase in child obesity, which makes reason for action. Disconnectedness from the origin of food in combination with the availability and affordability for processed food, obesity is increasing worldwide (WHO 2017). According to World Health Organization (WHO), obese children have a tendency to continue being obese in adolescence and adulthood, which is why it is preferable to act upon obesity at an early stage to avoid health problems later in life. Malnutrition in every form is often influenced by every aspect of the environment, since the environment contributes to children's perception of food. In line with the increasing amounts of processed food and food prepared out of home, the healthy foods are also seen to be combined with poor availability and affordability, which is yet another fact contributing to children's disconnectedness from the origin of food (WHO 2017).

Additionally, children have, due their age and as part of the development, a tendency to fear unknown foods and being influenced by the surrounding environment both culturally and socially (Bai et al. 2014; Houldcroft, 2014). Taste and preferences for specific foods are established early in life, which is why it is of great importance to establish healthy habits in the childhood. Consuming fruit and vegetables as part of a habit in childhood is an important predictor to the same habits in adulthood and thereby contributes to a healthy lifestyle avoiding lifestyle-related sickness as non-communicable diseases (Heimendinger & Van Duyn, 1995; Crockett & Sims, 1995).

It is the thesis of the authors of this paper, that the school is an important arena for these habits to set due to the amount of time spent there. The surrounding environment contributes to how every individual act when eating (WHO 2017). An example of this is the project from 2009 *Veggiecation,* which was established by Lisa Surian. Veggiecation is a program designed to create a positive environment leading to a favourable attitude towards vegetable consumption with third graders during the nine months of school year. The program affected the school environment with poster displays, nutrition

education in classrooms and vegetable tastings in lunchrooms and is due to its effective methods now implemented in over 30 US states as well as in Canada (Bai et al., 2014).

Another method to empower pupils to act healthier is the use of school gardens. The integration of gardens in schools changes the school environment into an arena where learning comes in different forms, both theoretical and practical. Furthermore, it visualises food and the origin hereof in a new way, that is seen to have an effect on the children's behavior in regards to food and the environment but also to each other, to the teachers and to the school in general (Dyg 2014, Dyg & Wistoft, 2018; Poston et al., 2005; Bai et al., 2014).

Additionally, the school environment represents one of the most significant arenas when aiming for a behavioral change in children, namely the concept of role modelling and the act of *modelling*. According to Albert Bandura and the *Social Learning Theory*, modelling has a significant influence on children, which is why role models can be useful to get children to consume more fruit and vegetables and change their attitude (Lowe, 2014). Role models can be cartoon characters and TV-celebrities, but it can also be friends, peers, teachers and parents, who all either separately or as a community impact the child and its behavior. Children often have a high tendency to copy a model, they admire, who are similar in age or older (Lowe, 2014; Houldcroft et al., 2014). Peers and friends are seen as a central source of influence on children's eating behaviour and habits (Bai et al., 2014; Houldcroft et al., 2014). This is due to the fact that time spent away from home in company with peers, makes the individual child model oneself to fit the surroundings, their friends and the environment they act and eat in, as well as finding oneself (Houldcroft et al., 2014). Being around friends and succeeding with a task individually or in a group can create a sense of community that will motivate to further work and peer-to-peer will be a contributing factor.

When looking at the facts, the authors of this paper find it relevant to include hands-on practices in the aim of empowering children to act more beneficial concerning their own as well as their families' health now and in the long term. Recent years several experiments have been made as part of studies concerning children and health and especially school gardens have been concluded as a useful tool to strengthen pupil's food knowledge, nutritional and environmental awareness as well as their self-efficacy in the school garden (Dyg, 2014; Poston et al. 2005; Graham et al., 2005; Nanny, 2007).

Additionally, school gardens have shown to have an effect on pupils' fruit and vegetable preferences as well as their intake. Pupils participating in school garden programs have a greater knowledge in fruit and vegetables and the origin hereof, as school gardens often focus on the entire process from 'farm to fork'. Not only do the pupils get new knowledge, they learn to act upon the knowledge during hands on activities that strengthens their self-efficiency. It creates a sense of connectedness and ownership to what has been grown and produced in their own school garden.

It is on the basis of the issues presented above that we have formulated the questions of this paper, which will be discussed in the following.

New, Interdisciplinary and Innovative Methods

The questions of this paper are some of the focal points of the Learn4Health project; creating new, interdisciplinary and innovative methods and hands-on learning context for pupils with the aim of strengthening their understanding of food and food systems and enhancing their food literacy.

One such project created within the Learn4Health project is the *Sprout Wagon.*The Sprout Wagon is a mobile steel construction on wheels; a wagon, designed to carry trays of sprouts, complete with its own adjustable water and light system. It is designed as a micro system to mirror natural conditions with the intention of providing pupils with an educational and hands-on approach to learn about the process of growing their own sprouts. The Sprout Wagon is designed and constructed in an interdisciplinary collaboration between architects and engineers at Aalborg University and school teachers at Arden School in Denmark. The Sprout Wagon is based in a common area alongside the school canteen, but its mobile design makes it possible to move into the classrooms, where it can be used in experiments in multiple school subjects. The aim is to make use of the Sprout Wagon in a wide range of relevant science subjects; the adjustable light, water and temperature makes it possible for pupils to experiment with measuring, calculating, and administering the necessary nutrition for the sprouts to grow and flourish. Complex concepts such as the photosynthesis can be illustrated, taught and explained in an understandable, hands-on way. The fruits of this collaborative effort between pupils and teachers, the various sprouts, are then available for pupils to harvest for their lunch, or used in home economic classes.

Another project within the Learn4Health project, also at Arden School is the *Squash Competition.* The Squash Competition is a new hands-on learning context and program that engages pupils and teachers in a school garden program. A pedagogical program oriented towards the teachers which further links the classroom to the natural surroundings (Larsen, 2018). Primarily, the program contains a Squash-growing competition, but it has a wide applicability as it could be focusing on any other vegetable depending on the surrounding possibilities i.e. season and country.

The Squash competition is based on a learning guide constructed for the teachers to involve the students in growing the most amounts of squash measured in kilos. The teacher manual is meant as a guide which aims to involve the children in the knowledge of growing vegetables. The children learn first and foremost about photosynthesis. Secondly, they are to search, find, read and conclude upon the most beneficial way to grow their vegetable, in this case the squash, and thereby establish a hypothesis on what they believe would be the most beneficial circumstances to grow the largest

amount of squash in kilos (Larsen, 2018). The pupils are then to weigh and measure the growing squash during the period, and at a certain deadline, harvest their crop. The program is designed to take place in several educational surroundings i.e. school garden, the classroom, the kitchen etc. Concurrently with the growing experiment the intention is to collect, prepare and taste healthy dishes containing squash and finally share their whole experience with Learn4Health participating schools and partners (Larsen, 2018).

In the long term, the aim is to increase the pupils' knowledge of the food they eat, to empower them and give them the ability to choose food beneficial for their health, and having fun while they do it. By making it a competition, the learning process can be experienced as a game and create a fun context, which can benefit the learning progress as well as the interaction between the children. Furthermore, it can provide the pupils with a sense of self-confidence and creating new friendships across class divides, year group etc. and thereby stimulating and improving social abilities (Lowe, 2014; Dyg & Wistoft, 2018).

A third project within Learn4Health worth mentioning in this context is the*WannaB Foodie Entrepreneur,* a project made in a collaboration between the two Slovenian partners, the France Prešeren Črenšovci Primary School, and the Centre for Health and Development Murska Sobota. The project involves school-owned raised garden beds, where the pupils will grow and cultivate traditional herbs and crops. The harvested results will be showcased and sold at stands manned by the pupils at a local market and festival, where local food and culture is promoted. The intended impact of this project is a better understanding of food origins and production for the pupils, but also the strengthening of their entrepreneurial skills. The new and innovative aspect of the project is that the pupils will not only be involved with the growing of herbs and crops, thereby connecting them to nature, but they will harvest their crops and sell them, which will teach them invaluable, practical skills in the field of small businesses. The involvement in the local festival and markets is further intended also to preserve local culinary culture and history; stressing the importance of healthy, local food for both pupils and their families. It is also the intention to strengthen the intergenerational connections; connecting kindergartens, school and the local community.

Several studies show the connection between school gardens and garden-based learning and nutritional and environmental awareness, well-being as well as new learning achievements (Dyg, 2014; Dyg & Wistoft 2018; Waliczek & Zajicek, 1999). The Sprout Wagon, Squash Competition and WannaB Foodie Entrepreneur are all examples of how new, interdisciplinary and innovative approaches to school gardens and garden-based learning can be developed in praxis. These projects are all designed to fit Learn4Healths overall aim of creating new interdisciplinary ways to promote the understanding of health, food and nutrition, in specific the origin of food to children (Larsen, 2018).

When initiating projects focusing on 'farm-to-fork', the origin of the food as well as the nutritional aspect is at focus. Processed and fast food supply is increasing, the general understanding of food and its origin is being neglected and the disconnectedness is growing, which makes this, the time to focus on food and its origin. During the years several studies have supported this; it is quite clear that getting your hands dirty, talking about, seeing, tasting and touching the food contributes to the general understanding and knowledge about the origin of food (Waliczek & Zajicek, 1999; Dyg 2014). Furthermore, understanding the concept of "farm-to-fork" gives new insights and can contribute to understand what food is, where it comes from and how it affects nutritionally and environmentally (Dyg & Wistoft, 2018; Bai et al. 2014).

One of the cornerstones of the Learn4Health project is to educate the children on how to make healthy and sustainable choices - both now and in the long term. The nutritional aspect of learning about vegetables is an indisputable fact, as vegetables are often connected to health. Health and health state is often associated with the above-mentioned disconnectedness. As processed food and several food products are constantly providing us with possibilities, opportunities and availabilities, the general health is at stake. An increase in child obesity is occurring at national as well as international plan (WHO 2017), why the nutritional aspect of growing and knowing vegetables is of great importance as mentioned previously (ibid.).

The three Learn4Health projects, The Sprout Wagon, The Squash Competition and The WannaB Foodie Entrepreneur provide the children with new learning abilities on individual plan as well as in groups (Dyg 2014). The children have the opportunity to work with and learn about new methods, possibilities - all this in new surroundings that might inspire them in a new way. Every identity is unique, but can change depending on the surroundings and the people one surrounds with and garden-related projects like these can lead to a new way of thinking and seeing oneself (Dyg & Wistoft, 2018).

We want to highlight that the contexts and activities of the projects can create a sense of community and create strong social bonds, it can also make the children socialise with each other bridging age, culture, gender etc. and in specific in this setting create bonds in between the class and create new communities (Dyg & Wistoft, 2018; Bai et al., 2014). Additionally, they can create a sense of empowerment as the children are working in groups learning from each other, modelling for each other in a so-called Peer-to-peer method (Bandura, 1977; Lowe, 2014; Dyg & Wistoft, 2018).

In regards to the Squash Competition and the Sprout Wagon, the children are learning from each other in groups, creating new communities and experience a higher level of fellowship. They exchange knowledge and strengths and experience a sense of empowerment and self-confidence when they succeed. Their self-efficacy will increase, which is often the bearing factor for the implementations to prolong (Houldcroft et al., 2014).

Designing The Sprout Wagon, the Squash Competition, and the WannaB Foodie Entrepreneur create new foodscapes where food is more visible, causing new room for interaction. It forces the children to think about vegetables, crops and sprouts and to have an opinion on these as well as share their point of view with peers.

The accessibility and availability becomes more near and creates room for daily integration of crops, making hands on activities and implementation in other school activities. A proposal could be math when measuring and weighing their home-grown crops in the process of creating the most optimal and beneficial surroundings when growing e.g. squash or working with raised garden beds. Accessibility and availability has shown to have an affect on children's consumption, additionally visualising food in the daily, in posters or by having a Sprout Wagon in the canteen or classrooms, is seen to create new awareness of the specific crops (Bai et al., 2014).

The involved school partners in the mentioned projects highlight that the ability of the pupils involved in these projects are stimulated and strengthened in regards to exploring the field of natural science. Growing crops requires acquainting yourself with how to create the optimal surroundings, for the crops to actually grow. This includes information about wind, water, soil and temperature that forces the children to think about the environment.

'Garden for Bellies' have recently shown how the school gardening showed side effects as the children showing empathy with animals and plants and seeing themselves as part of the nature (Dyg & Wistoft, 2018). Furthermore, the attitudes towards the nature and surroundings when being in Gardens for Bellies were experienced more positive (Ibid.) Another study, Project GREEN, made in Kansas and Texas, US focusing on improving environmental attitudes through a school garden program gave an insight into similar results. The students were significantly more positive towards environmental issues after participating in the school garden program regardless of duration (Waliczek & Zajicek, 1999). Within the Learn4Health projects there is a focus on the environment; the pupils involved are taught about seasonality, locality and sustainability, all with the aim of empowering the children to act on the basis of this knowledge when going to the supermarket, buying groceries (Larsen, 2018).

The Sprout Wagon - A New Interdisciplinary Learning Tool

The school is not only an arena for change, but also a place that can recall memories and friendships as well as an environment, where children should feel safe and seek comfort, due to the amount of time spent in school. In Denmark, a child is in school eight hours a day, five days a week, nine months a year on average, which means that this arena needs to be a comfortable space, with an environment beneficial for children to develop, both physically, mentally and socially. Additionally, for a child to participate in school, health is important, and an environment that embraces all of these aspects is,

according to the authors of this paper, an environment beneficial for children and their development.

Earlier in this paper, we raised the question on how to create such an environment through a new innovative approach that includes interdisciplinary methods and pedagogical tools to implement in multiple school subjects inside the classroom. On the basis of earlier studies concerning children and health, and the fact that they also emphasis the school as an important arena with focus on the school environment, Learn4Health has invented and designed the Sprout Wagon to enhance exactly this.

The Sprout Wagon is developed with the aim of reducing the distance between children and food and food production, and with the intention of forging a stronger connection between classroom and nature. The pupils get a chance to get their hands dirty; touching, smelling and tasting the sprouts while they learn, which creates a learning context with great possibilities. While working with growing the sprouts, the pupils will get involved with learning about the specific sprout, and they learn about how to gain and collect knowledge to set the best premises for growing vegetables in their natural surroundings. Furthermore, they get an insight into the concept of 'farm-to-fork', and learn about how to ensure and secure food safety. These learning contexts provide the pupils with an increased environmental awareness and crucial knowledge about nutrition (Dyg & Wistoft, 2018). The Sprout Wagon will have a base in the common area next to the canteen at Arden School, but its mobile construction makes it rather unique: The Sprout Wagon can be moved around the school and into different classrooms, and therefore be implemented in multiple settings, contexts and subjects, where the pupils can use it for various experiments. This is an innovative approach that includes new interdisciplinary methods and pedagogical tools to create a learning context where pupils are able to get their hands dirty, and strengthen their connection and understanding of nature in novel, creative ways. The Sprout Wagon, therefore, offers a prime representation of the overall aim of Learn4Health; developing new, interdisciplinary and innovative approaches to educate children about food, food production, nutrition and health. What is more, to secure the intention of wide applicability and transferability of the insights and detailed information about the Sprout Wagon project will be included in the Learn4health *HOFA Handbook,* a complete instructional guidebook offering detailed instructions and curricula guides to the different Learn4Health projects. Teaching material for both students and teachers, and instructional guides and blueprints, the construction of the wagon is being developed in connection with the implementation and subsequent evaluation of the Sprout Wagon. These thorough guides and manuals will ensure that other EU schools interested in doing a similar project will have a finished "recipe" for building and implementing their own sprout wagons. All this material will be collected in the Learn4Health HOFA Handbook. The HOFA Handbook will be produced as a book in PDF format and be available through the Learn4Health website at the end of the project, freely accessible for all interested schools across Europe. This open access will secure wide applicability, dissemination and great transferability. The HOFA Handbook will secure the

sustainability of the Learn4Health project, as the insights, experiences and the knowledge accumulated within the project period will be passed on to a wide audience, easily available for application, and therefore also optimising the overall impact.

Conclusion

We are witnessing a tendency in today's globalised food systems, where children are increasingly more and more disconnected from the food they are eating, from understanding the origins of food and from the process 'farm to fork'. This is an issue with potentially wide-reaching consequences to the overall public health and wellbeing, but also a challenge in regards to securing a sustainable environment and world.

Learn4Health is an EU Erasmus+ Strategic Partnership consisting of twelve partners representing 6 European countries which aims to create, strengthen and sustain health, nutrition and food literacy among pupils in primary and secondary schools in Europe. The Learn4Health project has developed new, interdisciplinary and innovative approaches, i.e. innovative teaching methods and learning contexts, aiming at teaching children about food, nutrition and health, providing hands-on learning contexts to strengthen their understanding of the origin of food, and the structure of food production. This way, Learn4Health strives to promote food literacy and educate children to be able to act on the basis of this knowledge, to create a healthier self and a better, sustainable world.

The development and construction of the mobile Sprout Wagon, The Squash Competition and the WannaB Foodie Entrepreneur are all examples of how the Learn4Health project has developed new, interdisciplinary and innovative approaches to educate pupils within the field of food literary. We have highlighted the Sprout Wagon as a prime example, as its unique mobile construction provides pupils with hands-on learning contexts in multiple school subjects, placing food, nutrition and health on the schedule. Furthermore, the detailed instructional guides and teaching material, which will be developed during the process of the Sprout Wagon and the other Learn4Health projects in the HOFA Handbook, will be freely available on the Learn4Health website at the end of the project period. This dissemination strategy will ensure that the insights, innovative approaches, knowledge and experiences will be shared across the borders, thereby securing sustainability of the project and creating wide-reaching impact – and, ultimately, happier, more food literate children.

In the process of improving the food literacy of the pupils, Learn4Health has developed and designed new, innovative and interdisciplinary teaching approaches that enhances the pupils' understanding of food and health. By presenting and discussing projects like The Sprout Wagon, The WannaB Foodie Entrepreneur and The Squash Competition, we have shown how it is possible to develop new interdisciplinary methods and learning tools that can be implemented as hands-on activities in multiple school subjects.

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Learn4Health
Scientific publication (3)

Taste Missions
– A new and innovative approach to improve pupil's health through food literacy.

IISES International Academic Conference, Copenhagen

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Taste Missions
– A new and innovative approach to improve pupil's health through food literacy.

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Abstract

What makes food, health and children so interesting? Food is one of the primary sources to human life that through a healthy lifestyle can be influencing the future of every individual. Especially children with their future ahead are an important target group that needs focus, since habits are often established at an early age (Piaget, 1969), which also is the case in regards to food and health. To secure the public health and wellbeing of future generations, and to ensure a more sustainable environment and world, we find that teaching children about food, nutrition and health is essential in order to develop a healthy relationship to food and eating habits (Başkale, et al., 2009).
Learn4Health, an EU Erasmus+ project, was created in 2016 to develop new and innovative methods to food literacy in European schools, to promote a broader knowledge of the origin of food and food systems, and to foster better health practices through new knowledge and self-efficiency. In the project, we seek to develop several innovative and new approaches that aim to increase food knowledge through interdisciplinary hands-on activities. It is our belief, that such methods can foster motivation and a better understanding of when, what and how food is grown, and thereby improve pupils action competencies in relation to food and health now and in the long-term.
This paper focuses on one of the Learn4Health activities, *Taste Missions*, developed, implemented and evaluated by Wageningen University & Research and aims to illustrate how hands-on food activities can benefit pupils in European public schools. Further, it will describe, analyse and conclude upon the activity, and finally, summarize by discussing Taste Missions in the larger Learn4Health context and in the broader perspective of the public by presenting the HOFA Handbook.

Keywords (5-10)
Food literacy, Learning, Hands on Food Activities, Health, Interdisciplinary

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Introduction

What makes food and health so interesting? Food is one of the primary sources to human life that through a healthy lifestyle, can be influencing the future of every individual. Food and health are interlinked and intertwined and affecting the body, regardless of what we might think. Food has in recent years become a trend and interesting topic of discussion for many, and as time and knowledge change, so do people. We experience a turn in food and food knowledge; food can no longer just be food. For many it is a religion or way of life, a medium to socialize or the exact opposite. Food is being discussed over and over again and so does the discussion of health that inevitably follows. Constantly we are told by health educators all over the world that 'you are what you eat'. The phrase is spoken by many through times, but there are still doubts in who was the inventor of that specific quote. In 1826 Jean Anthelme Brillat-Savarin wrote in the book Physiologie du Gout, ou Meditations de Gastronomie Transcendante:*" Tell me what you eat and I will tell you what you are"* (Brillat-Savarin, 1826). Later in 1863/4 Ludwig Andreas Feuerback wrote*:" Der Mensch ist, was er iβt." that translated into English is:" a man is what he eats."* (Cherno, 1963*).* The quote as a whole is not found until the 1920's and 30's when the nutritionist Victor Lindlahr, developed the catabolic diet as a conclusion of his belief that food controls health. In 1942 Lindlahr even published a book with the title:*" You are What you eat: how to win and keep health with diet."* (Lindlahr, 1942). As times, economy and the world changes, so does the people and the sociology of man. The groupings in public was no longer just based on economy and religion, food and dietary guidelines became a grouping factor establishing new groups in society, such as vegetarians did in the 1960's.

Nowadays the line is often used in public when the aim of conversation turns to realisation in what you eat or how you look. The phrase is now more a way of saying that obviously, one must understand that if you eat something greasy and fat, no wonder you turn up looking like that as well. The line has become a one-liner easy for everyone to state both in regards to the health of oneself, but also when it comes to relatives, friends etc. and comes with a background notion that to be fit and healthy, you need to eat good food. Food is indisputably connected to the body and how one look. Food is nutrition, vitamins, carbohydrates, fat and proteins that determine how a body looks, act and react, so maybe the line also has a sense of realism attached to it, but what happens if we turn the quotation around; you eat what you are? Food has become part of our personal identity, culture and for some even a religion.

While we witness many food trends, an increase in health-related sicknesses has occurred. These count multiple non-communicable diseases e.g. heart disease, type 2 diabetes, cancer etc. in a consequence of malnutrition, while on the other hand undernutrition as consequence of malnutrition are still a growing problem in other parts of the world caused by hunger and poverty. There is a world of differences between the two, but common for all is malnutrition.

In recent years, especially obesity has increased and stands out as one of the sinners to life-related diseases, even for children. Obesity is a grown problem in the western world, yet a lot of different studies have shown that knowledge about health, food, nutrition, physical activity etc. has an effect on how people act and behave in regards to exactly this (Holm,

2012), why governments and ministries in a lot of countries, if not every country, is focusing on having public health recommendations. In the wake of this, the EU Erasmus+ project Learn4Health was created in 2016 to establish new and innovative learning methods to food literacy for pupils in European schools, to foster health through new knowledge and self-efficacy and thereby cause behavioural change beneficial for children, parents and grandparents now and in the future.

Learn4health

Learn4health is an Erasmus+ Strategic Partnership project established with the aim of improving children's health while creating awareness and knowledge transfer about food, food origin and food and health. The project was created on the basis of several studies showing European problems within the fields of child obesity, malnutrition and health in order to prevent an increase in lifestyle diseases now and in the long term. Currently, a lot of regulations and policies have been dealing with the national and European problems, yet no actions have yet enhanced pupil's food literacy sufficiently. Learn4Health aims to establish new learning methods for teachers to increase the general understanding of food and health at an early age, as it is our belief that having knowledge on their own, children will be able to act in a more sufficient, responsible and healthier way in the long term, preventing obesity and lifestyle diseases and thereby increase public health generally.

In the project several programs are being developed, which all aim to increase food knowledge through hands-on activities. Studies (?) show that methods as hands-on activities foster motivation and a better understanding of when, what and how food is grown, produced or in other ways handled.

Learn4Health is an EU Erasmus+ Programme that includes twelve organisations from six European countries; Denmark, Spain, Slovenia, The Netherlands, United Kingdom and Lithuania.

This paper intends to describe, discuss and conclude upon one of the programmes developed through the Learn4Health; Taste Missions. Further, it will summarize by including the Taste Missions in the broader perspective under the theme of Children and health and thereby include the overall mission of the Learn4Health project by describing the generalisability of the developed programmes with the HOFA Handbook; The final product of Learn4Health.

First and foremost, the background for Taste Mission will be described.

Taste Lessons

In the Netherlands, nutrition education is not mandatory in primary schools. Nutrition education has to compete with a lot of subjects and a busy schedule of schools and teachers. Also, in general, primary schools in the Netherlands don't provide a school lunch, which means that children bring their own sandwiches, drinks and snacks or have lunch at home. Thereby the focus on food, nutrition and health in general are being neglected, despite the fact that knowledge and competencies within food often provide better and more sustainable actions now and, in the future (Dyg, 2012). Nowadays consumers, especially

children, are increasingly disconnected from the understanding of how and where their food is produced and the gap between food and the consumer, in this case the children, is getting bigger, while lifestyle diseases caused by malnutrition and obesity are increasing in the western world (Dyg, 2014). Often lack of food knowledge and the increase of obesity is being compared and with good reason, as several studies have shown these are often interlinked (Dyg, 2012) (Rush & Yan 2017) (Colatruglio & Slater, 2014). It is on the basis of these findings that Wageningen University & Research started developing a school-based nutrition education programme called Taste Lessons that later became part of the Learn4Health programme.

The aim of Taste Lessons is to increase children's knowledge and interest in food as well as their knowledge and skills regarding healthy and conscious eating behaviour.
Taste Lessons contains five lessons discussing various topics in relation to five themes; taste, nutrition and health, food production, consumer skills and food preparation. For each grade are specific lessons. The lessons are written and designed in such a way that they arouse the curiosity of children about their food, as food should equalise fun! Children perform all kinds of experiments by using their senses (taste, smell, touch, sea, hear) and become aware of their taste preferences and factors that influence preferences. All in a positive and playful way. In addition, children discover new food products (including their flavours) and learn about food production systems and health effects of food.
Since the start of Taste Lessons in 2006, more than 70 percent of all primary schools in the Netherlands have participated in the programme.

Research

In the period 2011-2012 scientific research has been done to assess the effect of Taste Lessons on behavioural determinants towards healthy foods (Battjes-Fries et al., 2015). In total 1183 children, aged between 9-12 years old from twenty-one different primary schools participated. In the intervention group, teachers implemented the Taste Lesson programme and afterwards children filled in three questionnaires. The control group received no lessons in food education. Results were collected at baseline, four weeks and six weeks in both the intervention and control group. Results showed that the intervention group showed a higher increase in knowledge about healthy and sustainable eating. Six months after the Taste Lessons this knowledge was still present compared to the children who did not follow the Taste Lessons. Additionally, Taste Lessons stimulate children to learn about food and the lessons create a social norm that encourages children to taste unknown products and to eat healthier (ref.).

Active involvement of children is seen as an important factor in nutrition education (Jones et al., 2012). It's very important that children experience their food and not only learn about food as abstract concepts, which is why they need to be actively involved and gain interest in the nutritional education programmes (Pérez-Rodrigo et al, 2001).

Therefore in 2013, Wageningen University & Research decided to add four additional learning activities to the Taste Lessons programme and to investigate if the programme may be more effective by adding these elements (Battjes-Fries et al, 2016). The additional activities were: a vegetable quiz, supermarket assignment, excursion to a vegetable grower and an extended cooking lesson with a dietician.
Thirty-three primary schools (877 children, 8-11 years old) were involved in this study, they performed a taste test and filled out a questionnaire. Results showed that when Taste Lessons is linked to experimental activities, more and stronger effects on knowledge and in several psychosocial determinants were found. No significant results were found on the level of behaviour. The results suggest that experimental learning methods might indeed increase the effectiveness of a nutrition programme like Taste Lessons. These results have been used to further innovate the Taste Lessons programme and therefore in 2016 Taste Missions were developed.

Taste Missions

Taste Lessons can be extended with more comprehensive Taste Missions. A Taste Mission is a digital, interactive and innovative way to connect hands-on activities to a broader food education programme by making use of principles of gamification. The subject of a Taste Mission is always one basic food group, such as vegetables, dairy or fruit. It aims to deepen children's understanding of the lessons by involving children in each step of the food chain with various hands-on-activities.
The focus is on discovering the origin of food. A Taste Mission consists of lessons and hands-on activities. Every Taste Mission always consists of (1) an introduction to the mission via the interactive whiteboard, (2) lessons inside the classroom, (3) an excursion to a food grower or food company, (4) visit to a supermarket or other food shops and (5) a cooking assignment.
Every Taste Mission is introduced by a main character who challenges the children to learn more about their food. During the lessons, the main character provides the children with feedback via the interactive whiteboard.
In total there are nine Taste Mission developed in the Netherlands, see Table 1.

Subject Taste Missions	**Age target group**
School garden	4 – 8 year
Bread	4 – 6 year
Dairy	6 – 8 year
Fruit	8 – 10 year
Drinks	8 – 10 year
Meat, fish, legumes, eggs and nuts	8 – 10 year
Vegetables	10 – 12 year

Oil & fat	10 – 12 year
Potatoes, rice and pasta	10 – 12 year

Table 1. Available Taste Missions in the Netherlands

Taste Mission and Learn4Health

As described all the Taste Missions are developed in Dutch. Because of the Learn4Health project, there was an opportunity to translate one of the Taste Missions to English, as with the Taste Mission Fruit, which is developed for children from 8-10 years old. Translating the Taste Mission brought some difficulties due to the different dietary guidelines per country and the fact that they were often only available in the native language. Therefore, a separate Taste Mission for each country was made.

A Taste Mission always consist of a main character who challenges the children to help with a certain problem. In the Taste Mission Fruit for the Netherlands, this is done by a chef of a very good and well-known restaurant in the Netherlands. But children in England and Denmark don't know him. It is preferable if the main character is a 'famous' person of the country, as he or she can function as a role model and the children can relate with this character, recognise him/her and will become enthusiastic to help him/her. A new suitable main character was therefore sought and for the international versions of the Taste Mission Fruit, Prue Leith, CBE was used as a main character.

After the translation, the possibilities and applicability of Taste Missions was tested by schools in Denmark and the United Kingdom.

The school in Denmark was very enthusiastic about the Taste Mission (Figure 1). They gave very high scores for the Taste Mission and have expressed great enthusiasm and wishes to do the other Taste Missions if there is a possibility to translate them as well. The school in Denmark indicated to repeat the Taste Mission Fruit next school year.

The children of the school in the United Kingdom enjoyed the Taste Mission, they indicated the taste sessions and discovering new sorts of fruits as their favourite. The teacher of the school in the United Kingdom gave the Taste Mission as a project.

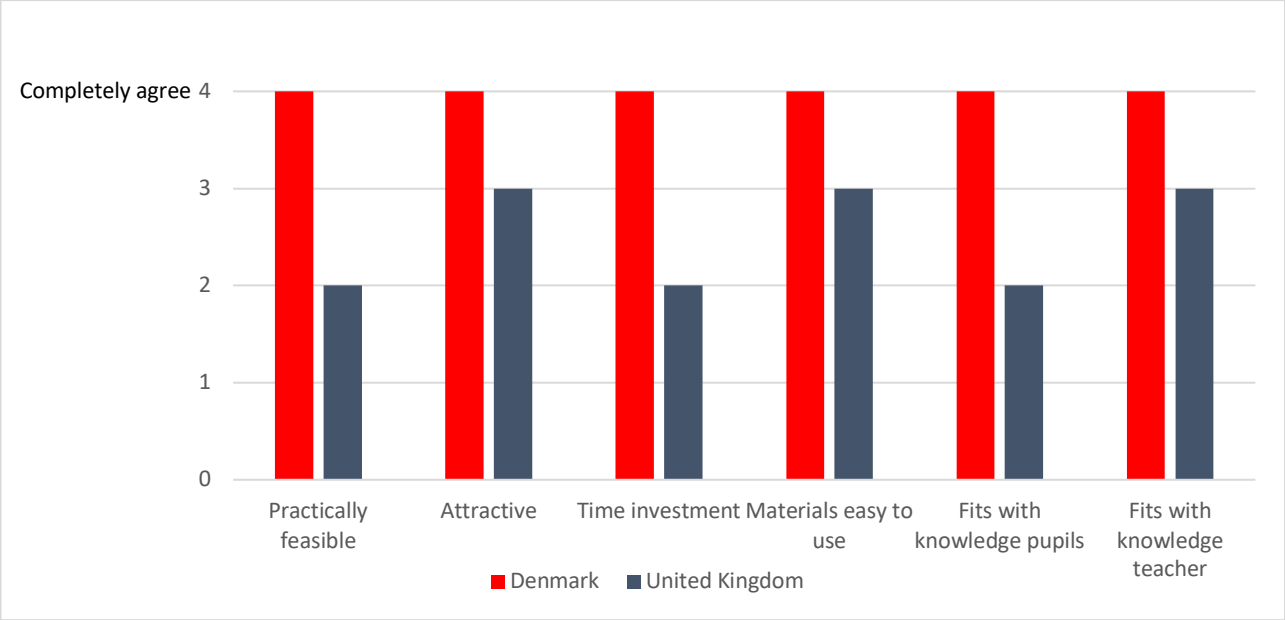

Figure 1. Experiences Taste Mission Fruit.

Based on the results it can be concluded that Taste Missions are feasible and easy to implement by other countries. With this module, a school can connect hands-on food activities with lessons in the class in an innovative way which is also proven to be effective. In the ideal situation, you want to have a unique version for every country that wants to work with the Taste missions. In this way, it fits best with the knowledge and experiences of the children and the dietary guidelines of the country can be applied.

Other activities in Learn4Health

In order to fulfil the goals of Learn4Health, several programs have been developed to enhance children's knowledge of food and health. In Denmark, The Mobile Sprout Wagon has been developed as a unique teaching instrument at Arden School in close collaboration With Aalborg University and the Danish Architect Hans Ramsgaard Møller.

The Sprout Wagon is a mobile steel construction on wheels; a wagon, designed to carry trays to grow sprouts, complete with its own adjustable water and light system. It is designed as a micro system to mirror natural conditions, with the intention of providing pupils with an educational and hands-on approach to learn about the process of growing their own sprouts. The Sprout Wagon is designed and constructed through an interdisciplinary collaboration between architects and engineers at Aalborg University and school teachers at Arden School in Denmark. The Sprout Wagon is based in a common area alongside the school canteen, but its mobile design makes it possible to move it around e.g. into the classrooms, where it can be used in experiments in multiple school subjects and across several classes and age groups. The aim is to make use of the Sprout Wagon in a wide range of relevant science subjects; the adjustable light, water and temperature make it possible for pupils to experiment, measure and calculate, while administering the necessary nutrition, for the sprouts to grow and flourish. Further, complex concepts such as the photosynthesis can be

illustrated, taught and explained in an understandable, hands-on way. The various sprouts that blossoms of this collaborative approach between pupils and teachers are then available for pupils to harvest for e.g. their lunch, or use in home economic classes.

Another project within the Learn4Health project, also at Arden School in Denmark, is the Squash Competition. The Squash Competition is a new hands-on learning context that engages pupils and teachers in a school garden program. It is a pedagogical program oriented towards the teachers, which further links the classroom to the natural surroundings (Larsen, 2018). Primarily, the program contains a Squash-growing competition, but it has a wide applicability, as it is possible to replace the Squash with any other vegetable depending on the surrounding possibilities i.e. season and country. The Squash competition is based on a learning guide, constructed for the teachers to involve the students in growing the most amounts of squash measured in kilos. The teacher's manual is meant as a guide that aims to involve the children in growing vegetables while enhancing the knowledge behind. It is the intention that the children, first and foremost is taught about the photosynthesis. Secondly, they are to discover the best way to grow their vegetable, through searching, reading and thereby being able to conclude upon the most beneficial ways in order to establish a hypothesis on what they believe would be the most beneficial circumstances to grow the largest amount of squash in kilos (Larsen, 2018). Next, the pupils are then to weigh and measure the squash, during the period to follow its growth, and at a certain deadline, harvest their crop. The program is designed in a way that makes it possible to include in several educational surroundings i.e. school garden, the classroom, the kitchen etc. which thereby creates a room for new and innovative methods to be used in different coherences to enhance the existing knowledge within any science subject while establishing new knowledge as well. Concurrently, the intention is to collect, prepare and taste healthy dishes containing squash and finally share their whole experience with Learn4Health participating schools and partners (Larsen, 2018).
In the long term, the aim is to increase the pupils' knowledge of the food they eat, to empower them and give them the ability to choose, prepare and eat food, beneficial for their health now and in the long term, while having fun.
The competition part can create variety to the existing school subjects and the intention is that the learning process can be experienced as a game and create a fun context, which can benefit the learning progress as well as the interaction between the children. Furthermore, it can provide the pupils with a sense of self-confidence and creating new friendships across class divides, year group etc. and thereby stimulate and improve social abilities (Lowe, 2014; Dyg & Wistoft, 2018).

A third project within Learn4Health is the WannaB Foodie Entrepreneur, a project made in a collaboration between the two Slovenian partners, the France Prešeren Črenšovci Primary School, and the Centre for Health and Development Murska Sobota. The project involves school-owned raised garden beds, where the pupils can grow and cultivate traditional herbs and crops. The harvested results will be showcased and sold at stands manned by the pupils

at a local market and festival, where local food and culture is promoted. The intended impact of this project is a better understanding of food origins and production for the pupils, while strengthening their entrepreneurial skills. The new and innovative aspect of the project is that the pupils will not only be involved with the growing of herbs and crops, connecting them to nature, they will also harvest their crops and sell them, which will teach them invaluable, practical skills in the field of small businesses. The involvement in the local festival and markets is further intended also to preserve local culinary culture and history; stressing the importance of healthy, local food for both pupils and their families. It is also the intention that this program should be seen as strengthening the intergenerational connections; connecting kindergartens, school and the local community.

Several studies have shown the connection between school gardens and garden-based learning and nutritional and environmental awareness, well-being as well as new learning achievements among children (Dyg, 2014; Dyg & Wistoft 2018; Waliczek & Zajicek, 1999). The Sprout Wagon, Squash Competition and WannaB Foodie Entrepreneur are all examples of how new, interdisciplinary and innovative approaches to school gardens and garden-based learning can be developed in praxis. These programmes are all designed to fit Learn4Healths overall aim of creating new interdisciplinary ways to promote the understanding of health, food and nutrition and the origin of food to children (Larsen, 2018).

HOFA Handbook

As a final result of the Learn4Health Project, The HOFA Handbook is developed as a manual for teachers and students that includes teaching instruments to new and innovative programmes to be implemented at schools worldwide.
The HOFA Handbook includes a description of the Learn4Health project, a list of participating partners, a thorough and exact description of each activity and the possibilities of up- or down-scaling the activity. Further, the activity description will include some of the experiences, challenges and recommendations that each responsible partner has been considering, as well as pictures to visualise the activity even further.
HOFA Handbook, a complete instructional guide book offering detailed instructions and curricula guides to the different Learn4Health activities. These thorough guides and manuals will ensure that other EU schools interested in doing a similar activity will have a finished “recipe” for implementing their own. All this material will be collected in the Learn4Health HOFA Handbook. The HOFA Handbook will be produced as a book in PDF format and be available through the Learn4Health website at the end of the project, freely accessible for all interested schools across Europe. The open access will secure wide applicability, dissemination and great transferability. The HOFA Handbook will secure the sustainability of the Learn4Health project, as the insights, experiences and the knowledge accumulated within the project period will be passed on to a wide audience, easily available for application, and therefore also optimising the overall impact nationally and internationally.

Primarily the Handbook will be published in English and secondly in other Learn4Health relevant languages to provide the reader with the best possible outcome when wishing to implement one or more activities.

Conclusion

To secure the public wellbeing and health of our future generations, and to furthermore assure a more sustainable world, it is essential that we add focus on the importance of teaching children about food, food production, nutrition and health. This has been the overall goal and aim of the Learn4Health project, an EU Erasmus+ project, which was created in 2016 to develop new and innovative methods to food literacy in European schools, to promote a broader knowledge of the origin of food and food systems, and to foster better health practices through new knowledge and self-efficiency. In this paper, we have presented the project *Taste Missions*, developed, implemented and evaluated by Wageningen University & Research, and discussed how this project can connect hands-on food activities with class lessons in an innovative and effective way to increase food literacy in children. Furthermore, we have presented and discussed two other projects within Learn4Health, as well as the HOFA Handbook, to place *Taste Missions* in the larger Learn4Health context. This is key to illustrate how the overall activities, approaches and results of this project can foster motivation and a better understanding of when, what and how food is grown, and thereby increase children's knowledge and interest in food as well as their knowledge and skills regarding healthy and conscious eating behaviour now and in the future.

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Learn4Health
Scientific publication (4)

Learn4Health:
New Innovative Approaches to Teaching Children about Food, Nutrition and Health

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Learn4Health: New Innovative Approaches to Teaching Children about Food, Nutrition and Health

Food Science & Technology Congress 2019

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Abstract: Increasingly, children experience a disconnection from understanding just where and how the food they are eating is produced. This tendency is a product of the nature of our globalized food systems, where we as consumers have hardly any interaction nor insight into the food we consume, until we meet it in the supermarket. This, of course, has an immense impact on food choices and eating habits, which might affect our health, our understanding of nutrition, the environment and ethical dilemmas such as fair trade and animal welfare. Reconnecting consumers, and especially children to the food they are consuming, and the natural world they inhabit, therefore, stands as a massively important task. For this reason, the Erasmus+ project, Learn4Health, was created. Learn4Health aims to communicate and disseminate a better understanding of food, food production, nutrition and health for pupils in primary and secondary schools. This is done by developing new and innovative teaching strategies and methods, where pupils are placed in concrete 'hands-on' learning contexts and activities. What is unique about the project is the constellation of partners; one higher educational institution or organization and one primary and/or secondary school working together – making this a truly interdisciplinary and multifaceted collaboration represent each of the six countries participating. In this paper, we intend to present the project and its approaches, discuss the findings and preliminary results, and, finally, present the strategies to secure the sustainability, transferability and dissemination of the project.

Keywords: children, health, nutrition, innovation, interdisciplinarity

Introduction

Increasingly, children experience a disconnection from understanding just where and how the food they are eating is produced. This tendency is a product of the nature of our globalized food systems, where we as consumers have hardly any interaction, nor insight into the food we consume until we meet it in the supermarket. This, of course, has an immense impact on food choices and eating habits that might affect our health, our understanding of nutrition, the environment and ethical dilemmas such as fair trade and animal welfare (Dyg, 2014). Focusing on children as an essential target group is especially prudent, as habits are often established at an early age and include taste and preferences for specific foods (Piaget, 1969; WHO 2015; Lowe et al., 2014; Heimendinger & Van Duyn, 1995; Crockett & Sims, 1995). Reconnecting consumers, and especially children to the food they are consuming, and the natural world they inhabit, therefore, stands as a massively important task. For this reason, the Erasmus+ project, Learn4Health, was created.

Learn4Health is an Erasmus+ Strategic Partnership, which include twelve partners in total, representing 6 European countries; The Netherlands, Spain, Slovenia, Denmark, Lithuania and the United Kingdom. It is the aim of Learn4Health to communicate and disseminate a better understanding of food, food production, nutrition and health for pupils in primary and secondary schools. This is accomplished by developing new and innovative teaching strategies and methods, where pupils are placed in concrete 'hands-on' learning food contexts and food related activities. What is unique about the project is the constellation of partners; one higher educational institution or organization and one primary and/or secondary school from each country working together – making this a truly interdisciplinary and multifaceted collaboration. In this paper, we intend to present the project and its approaches, discuss the findings and preliminary results, and, finally, present the strategies to secure the sustainability, transferability and dissemination of the project.

Approaches

As Piaget notes (1969), habits are often established at an early age, which is why teaching children about the origin of food, and increasing their food literacy is essential to create awareness in regards to health, nutrition and the environment in order for them to be able to act and involve themselves in their meals. Further, according to WHO: "A healthy diet helps protect against malnutrition in all its forms, as well as non-communicable diseases (NCD's), including diabetes, heart disease, stroke and cancer." (WHO 2015). Today, the availability of processed and fast food has increased immensely, also due to the fact that we spend more time away from home, causing convenience food to become

more in demand (Bäckström et al. 2004). This fact will expectedly have a negative effect on our perception of food and food production, especially for children, only furthering the disconnect and knowledge gap. This, in turn, has also great consequences on the increase in worldwide child obesity (WHO 2017).

According to Dyg (2014), the school is an essential arena to address this gap of knowledge as is provides a very suitable context for promoting good health practices and for teaching about food. The school context can in this optic be utilized as an ideal space and environment to nurture a connection between nature and children, and to strengthen the understanding of food production and processes. Further, exposing children to vegetables and especially the growth of vegetables has shown to be a key factor in increasing children's liking for the exposed vegetables as well as to other vegetables and healthy foods (Houston-Price, 2009; Cooke, 2007). An added benefit to this is the well-documented fact that healthy pupils are better prepared to learn (Kristjánsson et al., 2010; KL, 2015). The aim of the Learn4Health project is to create new, interdisciplinary and innovative methods and hands-on learning context for pupils within the school, to strengthen the pupils' understanding of health, food and food systems, and to enhance their overall food literacy. A great strength of the Learn4Health project is the unique collaboration and blended learning between public schools and higher educational institutions (Clausen & Fisker, 2017). This cooperation creates the possibility to focus on the strengths of interdisciplinary and blended learning approaches. Blended learning approaches are being increasingly incorporated into educational courses all across the world, as it focuses more on better student outcomes and more effective learning (Jones, 2016). In the Learn4Health project, the Problem-Based Learning (PBL) approach is used to accomplish this. Problem-based learning is a highly recognized study method, which is widely utilized at Aalborg University in Denmark. Essentially, the problem-based learning method organizes the learning process in a way that students/pupils are constantly and actively engaged in finding answers themselves (Graaf and Kolmos, 2007). The professors Anette Kolmos and Erik de Graaff (2017) from Aalborg University states that problem-based learning is defined by ill-structured and open-ended problems, which can provide a good context for learning. Such complex tasks are not easy to solve independently, therefore interdisciplinary group efforts are involved in PBL (Graaf and Kolmos, 2007: p.4). The PBL model aims at ensuring that students or pupils' project work is exemplary regarding both the content and approach. The word exemplarity implies that learning outcomes achieved during concrete project work will be transferable to similar situations encountered by pupils in other contexts. In Learn4Health, the method of problem-based learning is widely implanted, using

food, nutrition and health as the underlying learning occasions to support the development of interdisciplinary, entrepreneurial, digital and language skills and qualifications (Clausen & Fisker, 2017; Kofoed & Fisker, 2005). In the project, the practical methods implemented are experimental approaches, which involves hands-on learning activities by including 'garden to table' aspects and training, student-centred supportive learning and co-creation as well as open school approach reaching out to local community enterprises and farms (ibid.)

In the following, we will introduce three examples of the developed projects within Learn4Health to illustrate the chosen approaches: *The Sprout Wagon*, *The WannaB Foodie Entrepreneur,* and *Case Competition* held in connection with the 2018 World Food Summit in Copenhagen, and thereby discuss the findings and preliminary results of these.

Preliminary Findings and Results

Throughout the Learn4Health project, each country has been responsible for developing, implementing and evaluating one or more small projects. Several of these projects use gardening as the learning context, considering, that much research clearly shows a clear connection between garden-based learning and nutritional and environmental awareness, improved action competencies and overall well-being (Dyg, 2014; Dyg & Wistoft 2018; Waliczek & Zajicek, 1999; Bai et al., 2014; Suriano, 2012). An example of such a project is *The Sprout Wagon*, a project made in an interdisciplinary collaboration between architects and engineers at Aalborg University and schoolteachers at Arden School in Denmark. The Sprout Wagon is a mobile steel construction, designed to carry trays to grow different sprouts and with its own adjustable light and water system, designed to mirror natural conditions to provide pupils with fun and educational hands-on experiences while learning about the process of growing, calculating, measuring and nurturing their own sprouts (Fisker et. al, 2018). Another project is the *WannaB Foodie Entrepreneur*, a project made in a collaboration between the two Slovenian partners, the Centre for Health and Development Murska Sobota and the France Prešeren Črenšovci Primary School. This project sees the pupils being actively involved in the construction and upkeep of school-owned raised garden beds, cultivating and growing local and traditional herbs and plants. When the crops are harvested, the pupils take their herbs to a local market and festival, where they market, showcase and sell their results, thereby also honing their entrepreneurial skills.

Both of these projects have the intended impact of cultivating a better understanding of food and its origin and production in the pupils learning ability. The projects also bring the pupils in situations and contexts that connect them to their surrounding nature. Both projects establish great emphasis on placing the pupils in practical, hands-on situations, which will teach them invaluable practical skills now, and in the long-term. These projects are designed to fit Learn4Healths overall aim of creating new interdisciplinary ways to promote the understanding of health, food and nutrition and in specific the origin of food to children. Both the Sprout Wagon and the WannaB Foodie Entrepreneur are examples of how new, innovative and interdisciplinary approaches to school gardens and garden-based learning can be developed in praxis (Ibid.)

Another very interesting and valuable project within the Learn4Health frame was a summer school course, developed by Aalborg University, and conducted in Copenhagen in August 2018. This summer school training course was held in collaboration with the Danish Ministry of Environment and Food at the annual international World Food Summit in Copenhagen. All Learn4Health partners were present, not only to facilitate the training course, but also to present the project and its preliminary results through several events and sessions. The summer school training course was conducted as a *case competition*, an international competition where 30 international students were gathered to develop concepts that could answer the questions in regards to the theme: children and health. The 30 students were given only two intense days to create a stop-motion film that could communicate their concept and message, using vegetables and fruits as their actors. There were lectures by a range of different experts in the field, among those the partners from the project, and on the final day, three of the groups presented their concepts at the old Danish Stock Exchange for the final summit sessions, where a panel of judges, led by the Danish Minister of Environment and Food, crowned a winning team. At this point in the Learn4Health project, all partners were well into the process of developing and implementing their respective projects, which meant that each of them brought very valuable preliminary inputs and insights to the event. All efforts marking this event as a pivotal context to work and further develop the innovative approaches to foodscape teaching and learning, with a point of departure in cases related to Learn4Health. A foodscape originates from the word landscape and is a combination of relations between food, places and humans (Hedegaard 2015). The ideology of scapes is an illumination of the constantly changing surroundings of products, humans and ideas, which are present and interconnected at all time. The event focused on providing both theoretical and practical expertise on developing new designs and prototypes as well as strategies and curricula on how to integrate a foodscape pedagogy into existing school curricula.

The success and impact of a project such as Learn4Health rests not only on the successful development of new innovative approaches and prototypes, but also on how these innovative results, insights and experiences are disseminated and sustained. Throughout the project, therefore, a great emphasis has been put on strategies in optimizing the impact, transferability and dissemination of the project, on both local, national and international levels.

Impact, transferability and dissemination of the project

Throughout the process of intense collaboration, communication and meetings, the Learn4Health project has had an impact on the participants and the participating organizations by increasing their skills, knowledge and competencies regarding novel instructional and evaluation techniques applied to food, nutrition and health pedagogies. The commencement of the project partner's work on their individual projects has had and will have a potential impact on their approaches when teaching about food, food production, nutrition and health. The unique composition and structure of the partnership, not only between different educational sectors, but also between six vastly different cultural and socio-economic national contexts, has contributed with valuable knowledge. The approaches, direction and results of the project have been impacted very positively by this truly interdisciplinary and international collaboration, where partners have had opportunity to discuss, debate and workshop their preliminary results as well as exchange useful feedback.

The dissemination of the project results inside and outside the partnership will be carried out primarily on the project's website www.learn4Health.eu. Furthermore, the project's overall agenda has been disseminated outside the project partnership through the publication of a series of scientific papers. Additionally, all project partners have been working diligently on the dissemination of the process of the project and its preliminary results. This has been done, partly, through various outreach activities, where Learn4Health has been presented and discussed in many different fora and settings, and to a great number of diverse groups of people across Europe at both local, regional, national and international levels. At local and regional levels, each partner has worked to disseminate the project and the preliminary results within their organization and on their specific surroundings and communities through organizational channels and at various outreach activities and events. This dissemination strategy has been found important, to make sure the project has a great foundation and resonance within the different local spheres involved in Learn4Health, grounding the project not only

on a European collaborative level, but also at local levels. All efforts to strengthen the sense of ownership and relevance within the organizations and communities, which thereby could gain great insights and benefits from the project and its results in praxis.

At a national and EU level, the dissemination strategy has and will be focused on the creation of the HOFA Handbook, which will have been developed upon the completion of the project Learn4Health. The HOFA Handbook is designed to be a complete instructional guidebook offering detailed instructions and curricula guides to the different Learn4Health projects (Fisker et al, 2018). The purpose of the HOFA Handbook is to secure the optimal applicability and transferability of the insights and detailed information about the different Learn4Health projects to all interested audiences. The HOFA Handbook will include teaching material for both students and teachers, and it will include instructional guides and blueprints for the constructions involved in some of the projects, experiences, insights and suggestions, and options for scaling projects up or down to comply with resources, time frames and other criteria in different settings. The HOFA Handbook will feature a short 'highlight' section, where each project is presented, and the option of a 'read more' section as appendices, where the more instruction-heavy projects can attach relevant documents (Ibid.). The targeted audiences for the HOFA Handbook are on several levels: at a local level, the target audiences are teachers, parents and students interested in the insights and implementation of one or more of the projects of Learn4Health. On a broader local and regional level, the target audiences are school administrations, municipalities and organizations who could benefit from the insights and results. On a national level, the target audiences are governmental authorities and non-governmental organizations who have interests in education, youth and health-related issues and policies on a national level. On the EU/international level, the target audiences are EU-related authorities and organizations, as well as international non-governmental organizations who have interests in education, youth and health-related issues and policies on an EU or international level.

The HOFA Handbook will be produced as a book in PDF format and be available through the Learn4Health website at the end of the project, freely accessible for all interested audiences across Europe. This open access will secure wide dissemination, applicability, and great transferability. The HOFA Handbook will secure the sustainability of the Learn4Health project, as the insights, experiences and the knowledge accumulated within the project period will be passed on to a wide audience, easily available for application, and therefore also optimizing the overall impact.

Conclusion

We can conclude that we are witnessing how children are increasingly experiencing a disconnection from understanding the origin of food. This tendency has become a product and nature of our globalized food systems, where we as consumers have hardly any interaction nor insight into the food we consume until we meet it in the supermarket. Inevitably this situation have a serious impact on our eating habits and food choices, as well as our understanding of health, and has direct consequences for the environment and ethical dilemmas such as fair trade and animal welfare. With the understanding that habits are established early in life, reconnecting current and future consumers to the food they are eating, and the natural world they inhabit, therefore, stands as a massively important task. This has been the overall aim of the EU Erasmus+ Strategic Partnership, the Learn4Health project. Using problem-based learning and interdisciplinary methods and approaches, as well as understanding the school context as an essential arena to reach the aim of the project, Learn4health has focused on new ways of teaching children about food, nutrition and health, providing hands-on learning contexts to strengthen their understanding of the origin of food, and the structure of food production. Projects such as the Sprout Wagon, The WannaB Foodie Entrepreneur and a summer school training course in the form of a case competition, are examples of how the project has initiated and developed new, interdisciplinary and innovative approaches. Approaches that deals with innovative teaching methods and learning contexts, which aims to create, strengthen and sustain health, nutrition and food literacy among pupils in primary and secondary schools in Europe in order to decrease food-related illnesses and child obesity. A great emphasis has been invested on strategies for optimizing the impact, transferability and dissemination of the project, on both local, national and international levels. On an international level, the HOFA Handbook will stand as the most important result, as its open access and structure secures wide dissemination, applicability, and great transferability of all results. The HOFA Handbook will secure the sustainability of the Learn4Health project, as the insights, experiences and the knowledge accumulated within the project period will be passed on to a wide audience, easily available for application, and therefore also optimizing the overall impact. This way, we believe, the Learn4Health project will stand as a great example on how to initiate, promote, teach and cultivate the very necessary food literacy our children need. It is possible to educate them and provide them with action competences – Hands On Food Activities - that enables them to act on the basis of this knowledge, to create a healthier self and a better, sustainable world.

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