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Passive feeding or active learning in the kindergarten foodscape?

Qualitative insights from the Dagmar intervention

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BENT EGBERG MIKKELSEN

Abstract.

Introduction

There is a growing interest in actions that can contribute to increased food literacy and health among young people. As a result, the topic is increasingly becoming the subject of policymaking both in public health and in the educational system. Public engagement in these fields has led to a new focus on the importance of food for young people in institutions. However, approaches seem to follow slightly different paths. Food is mainly seen as a question of providing food or as both a question of providing and learning about food. This paper aims to explore the latter of these. Do kindergartens have the potential to move beyond simple provision and become active spaces for learning and literacy development? And, if so, what are the potentials and barriers for such approaches?

Methodology

A formative evaluation of the Dagmar foodscape intervention implemented in the Fuglsang kindergarten in the Danish city of Aalborg was performed. A case study approach based on observations, interviews, and focus groups was applied. The Dagmar intervention – an integrated food provision and learning programme – was developed and implemented. Qualitative data was collected to gain an insight into the potential and constraints for developing food literacy among children using such an approach. Pedagogues and kitchen staff were the informants in the data collection. The intervention was organized using an action research approach in which data was collected as an integral part of the intervention. Data was collected using observations and focus groups interviews. The intervention aimed to develop and evaluate new tools and instruments for the creation of food literacy among children with the participation of pedagogues and kitchen staff.

Findings

The intervention succeeded in creating a new type of foodscape in the kindergarten in a way that combines the preparation and the serving of food with both in-door and out-door hands-on food activities for children. A conceptual model of this foodscape consisting of a mealscape, a kitchenscape and a learningscape is suggested. Pedagogues and food workers were identified as important potential change agents in the kindergarten foodscape. Preferences and likings,

Bent Egberg Mikkelsen
University of Copenhagen
Department of Geosciences and Natural Resources
E-mail: bemi@ign.ku.dk

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knowledge, skills and competencies, as well as the language children used were identified as important aspects of the food reality in kindergarten. These were perceived as important cornerstones in the understanding of the kindergarten foodscape and its action possibilities. Knowledge, skills, and competencies in the two important professions of the kindergarten workforce were identified as important determinants that need to be addressed if the full potential in the action possibilities of kindergarten foodscapes is to be unleashed. Interdisciplinarity based on a mutual inter-professional recognition was identified as key to the development of the kindergarten foodscape. The study identified two important areas for action: the social practices around lunch and in-between meals as well as stand-alone pedagogical activities based on a hands-on approach and learning by doing. The study suggests that addressing the determinants are important if the kindergarten foodscape is to be used to create healthy eating and food literacy.

Discussion

The study provides new insight into the value of hands-on food activities for fostering food literacy in the kindergarten. In addition, the study functions as an exploration of the application of foodscape studies in understanding the complexity of food and eating in kindergarten. The study identifies important action possibilities in the kindergarten foodscape and suggests that the kindergarten could be an important arena for the promotion of healthier lifestyles and food literacy among kindergarten-aged children. The study suggests that there is a need for a new interdisciplinarity among the two key professions in the kindergarten and that the pedagogical curriculum in the pedagogues' education could benefit from a rethinking focusing on food and eating and problem-based learning.

INTRODUCTION

Sedentary lifestyles and unhealthy eating patterns have negative health consequences, and in particular there is concern about unhealthy lifestyle patterns among children and young people. Low levels of food-related knowledge and skills as well as poor food literacy among young people have been suggested as a contributing factor (Caraher et al 1999). Many lifestyle patterns are established in early life (Kelder et al 1994; Neumark-Sztainer et al 2011; Skinner et al 2002), and studies have shown that health status has a tendency to track into adulthood (Whitaker et al 1997; Wright et al 2001). Also, eating behaviour tends to track into adult life (Birch et al 2007; Mikkilä et al 2005), and studies have shown that children are more likely to accept new foods at kindergarten age than later on when they are school aged (Skinner et al 2002; Neumark-Sztainer et al 2011). As a result, there is a particular interest in population-based strategies that target children in their early years. The settings-based approach has increasingly been suggested in policy documents that attempt to suggest actions counteracting the increasing prevalence of obesity and overweight (Council of Europe 2005; WHO 2006; EU 2007). The settings approach (Dooris 2001) argues that targeting behaviours (e.g., eating) among children in their daily life arenas (e.g., kindergarten) is particularly effective. As a consequence, settings-based strategies aimed at promoting healthier lifestyle patterns in kindergarten have increasingly become an object of scientific inquiry (Mikkelsen 2009; Caroli et al 2011; de Silva-Sanigorski et al 2012; Olesen 2013).

In particular, interventions focusing on food and eating have become popular, since in many cases meal activities are an integral part of daily life in the kindergarten (Hughes et al 2007; Gubbels et al 2010). Furthermore, meal activities as a social practice constitute an opportunity for learning about social life and the meal, as well as about life skills, nutrition, and a healthy lifestyle. Food for children in institutions for children have undergone a remarkable transition over recent decades (Morgan & Sonnino 2008; Mikkelsen 2014). From being considered a rather mundane and trivial task, food services in these institutions are now being explored for their potential to be more than just passive feeding, and a new public engagement in this field can be seen in many countries. As such, the kindergarten is increasingly recognized as a space for both learning about a healthy lifestyle and life skills as well for practising healthy eating practices. And, there is an increased recognition of the need to think about meals for children in such institutions as much more than the simple provision and satisfaction of physiological needs. This also involves addressing the learning potentials as well as social aspects. Andersen and Holm (2013) point to the need for a deeper understanding of the meaning of food culture in day-care meal pedagogy, and in particular how food literacy, food "bildung", and food enjoyment are interrelated, and Sandell et al (2016) point to the need for using the food practices as active learning components. According to Jonsson et al (2005), there is also an unexplored potential for using hands-on learning approaches and experimental education among young people at school. Truninger and Teixeira (2015) argue for a rethinking of meal practices in order to emphasize, the innovative, sensorial, and creative aspects rather than the ones related only to food provision. In particular, there is need to study the differences in ways of providing food in individual versus collectively organized fashions. According to Karrebæk (2013), traditional lunch box schemes risk creating different food cultures within the kindergarten rather than a collective one.

However, previous studies have shown that far from all pedagogues feel responsibility in relations to the eating patterns of children in kindergarten (Mikkelsen 2011). In addition, the Danish kindergarten system has been the target of an increasing number of policy initiatives over recent decades, including the bill on curricular plans (Ministry of Social Affairs 2004) as well as the bill on lunch arrangements (Ministry of Social Affairs 2010). This politicization of the kindergarten arena may be causing resistance from staff and deserves special attention when new food and nutrition schemes in kindergarten settings are considered. Against this background, the Dagmar kindergarten food-intervention was developed to explore the potentials of an integrative approach to learning about food and nutrition in the kindergarten in which both the *practices around eating* as well as the *pedagogical and didactic opportunities* are taken advantage of.

The aim of the paper was to explore the potentials of the kindergarten to move beyond a simple and passive feeding mode of operation to also act as an active learning space that can contribute to food literacy through hands-on food interventions.

CONCEPTUAL FOUNDATION

Conceptually, the Dagmar study builds on two main concepts. The first one is the idea that it is possible and useful to understand the kindergarten as a foodscape. Foodscape studies have evolved over recent decades and represent a way to underline that the food environment is more than just the food, since it also includes a dynamic socio-physical space in which not only eating takes place but where potential learning about food and eating can also take place (Mikkelsen 2011, 2014; Torralba & Guidalli 2014). Secondly, the paper builds on the idea that we can refer to the learning outcomes of the active learning processes about food and eating as food and nutrition literacy (Vidgen & Gallegos 2011; Dyg & Mikkelsen 2016). The increasing number of papers published

using the foodscape as conceptual framework runs in parallel with the increasing number of studies examing the role of food environments in shaping food choices. Common to both the foodscape and the food environment perspective is that both of them acknowledge the importance of food and the individual but that they in addition also take the "out there ness" into consideration in the sense that contextual factors in the food choice and eating situation is acknowledged as being important. As such it should be noted that the role of kindergartens as "settings" that influences foodways previously has been studied using other terminology for instance a food environment conceptual understanding (Story et al 2008. Hardy et al 2019, Manios 2013).

By taking a foodscape approach, the Dagmar intervention aims to look at the whole of the kindergarten and its activities. It adopts a view where food is not only the feeding of children but also but also the learning and pedagogical activities. In the context of this paper, the idea of a foodscapes approach has been used to frame the complexity of the food reality of the kindergarten. Although foodscape studies has been developing over the past decade it has not yet resulted in clear framework for foodscapes that can be used for analytical purposes and the concept is continually evolving. The current study is an attempt to make a contribution to the development of foodscape studies.

The idea of foodscapes – as well as the idea of food environment studies - takes the settings approach to health promotion suggested by the WHO in 1986 (Dooris 2011) as a point of departure. The settings mindset understands the spaces where everyday life practices unfold as well-suited arenas for actions that can promote a healthier lifestyle in its broadest sense. In the study, the notion of a foodscape is used as a way to refer to, capture, and understand the complex socio-physical environment that makes up the kindergarten in relation to food, eating, and learning. This space is at the same time a place for eating practices in relation to breakfast, lunch, and in-between meals, as well as a place for learning about the multitude of meanings and aspects of food and eating. The foodscapes way of thinking offers a framework for understanding this mesh of people, food, and environment present in the kindergarten environment.

Foodscape studies (FSS) has been a growing area of research among scientists engaged in the study of foodways, and it offer a well-suited conceptual foundation that can be used to accommodate the holistic approach that is needed to understand the complex social interactions taking place in relation to eating at an early age in kindergarten. The concept of foodscapes draws on inspiration from different sources. The idea of "–scapes" was originally put forward by Appadurai (1996) to capture the interconnectedness of things over place and time. It has been further developed by different scholars into the idea of "foodscapes".

According to Adema (2007) the foodscape can be seen as cultural, economic, historical, personal, political, and social landscapes that are related through food. Foodscapes in institutional settings can be referred to as "captive foodscapes" in order to illustrate the special importance of the places where we eat frequently in "captive" daily life, such as schools, kindergartens, and institutions (Mikkelsen 2011, 2014; Torralba & Guidalli 2014). These foodscapes can be assumed to be of special dietary importance due to the high frequency of eating there. And not only do they have dietary significance, they also offer – under the right conditions – the potential for learning. The idea of foodscapes is further inspired by Gibson's (1986) notion of affordances – the action possibilities that the environment offers.

The Dagmar intervention uses the idea of a kitcheneur. It is rather new type of role in Danish daycare – at least in the kindergartens. Arrangements for serving food for children in day care has been present for many years and has historically been practiced for the infants and toddlers 0-3 years of age in some institutions. But since the new nation-wide legal framework for lunch

arrangements for the whole of the day care domain was adopted in 2009 a new type of profession has developed. In this paper it is referred to as a kitcheneur. A kitcheneur is a new role in the kindergarten rather than a new educational background. Kicheneurs are thus taking on the responsibility of exploring the opportunities in the borderline between pedagogy and foodservice. Between serving and learning about food. These opportunities has been developing in the wake of the new interest in taking advantage of the possible food literacy training opportunities that the new lunch arrangement schemes has brought along. Kitcheneurs comes with more educational backgrounds and can have a formal education either as administrative dietitians or as home economists. As such, they will have broad knowledge and skills in nutrition. Since official recommendations issued by the National Food Agency exists the kitcheneurs are responsible for making sure that meals are in compliance with those. But kitcheneurs on the other hand has not necessarily received formal training in pedagogically oriented agricultural practices or in new types of urban food, gardening or farming technologies. As such the kitcheneur plays an important role for the kindergartens that has chosen to develop as a way to develop the opportunities that lies in moving from passive feeding to more active learning and pedagogical strategies.

In the Dagmar intervention, the foodscape way of viewing the kindergarten has been used to create a mental and physical space where the actors involved – pedagogues and kitcheneurs – can develop and test the reach of the active approach to learning as an alternative to a traditional passive feeding approach to food in kindergarten. One strength of using the idea of affordances in this context is that it underlines the fact that different actors see different opportunities, and as a result, different actors need opportunities to negotiate a shared view of how the kindergarten foodscape should be used. This is in particular important in the Dagmar intervention, since it builds on the combined efforts of food and learning staff (i.e., the kitchen workers as well as the pedagogues). For obvious reasons, the way of looking at food is different between kitcheneurs and pedagogues. Using a foodscape way of thinking allowed for creating a mentally and physically coherent space encompassing both a backend kitchen part as well as a front stage part for pedagogical and learning purposes.

The idea of food literacy builds on theories that the sum of the knowledge, skills, and competencies of children in relation to food can be expressed as a literacy of the individual. With the increasing prevalence of nutrition-related disorders and unhealthy eating patterns of young people, the idea of literacy in relation to food and eating has increasingly become the subject of scientific inquiry. The role of home economics in fostering food literacy has been studied by Caraher and Reynolds (2005), Smith (2009), and Pendergast et al. (2011), as well as the role of cooking classes (Chenhall 2010). The study of knowledge, skills, and competencies in relation to food and nutrition originates in the work on agricultural literacy, defined as the understanding of the entire food chain architecture (Powell & Agnew 2008). The idea of food literacy focuses on the consumption side and has been dealt with in a number of contributions (Brooks & Begley 2013; Vidgen & Gallegos 2011). Food literacy is the:

> *relative ability to basically understand the nature of food and how it is important to you, and how able you are to gain information about food, process it, analyse it and act upon it. (Vidgen & Gallegos 2011)*

A growing number of studies suggest that there is a link between hands-on food activities and food literacy. Hands-on food activities are based on the ideas of learning by doing (Dewey 1938; Fordyce-Voorham 2011), and they cover a broad range of activities for young people in

school/kindergarten besides simple eating and are all aimed at creating learning about food and nutrition by integrating them with food activities (Mikkelsen, 2013). These include, growing, harvesting, preparation, menu planning, sensory activities, and other activities related to other parts of the food chain than the meal itself. The literature of such doings is growing and includes activities such as taste education, Farm2School links, outdoor cooking, roof gardens, edible school yards, cooking classes, and school gardens. For instance, the Farm2School cooperation has in a number of cases been successful in creating connections between kindergartens and local farms (Roche et al 2012; Ratcliffe 2012; Moss et al 2013), allowing for cooperation where children and teachers can visit and learn about farm life and where farmers can visit and teach in kindergartens. In some cases, such links with local food geography has also been extended to include local sourcing for the school meal programmes (Ruge & Mikkelsen 2013).

It should be noted the traditional understanding of food literacy does not include agricultural literacy. And the growing and production part is not incorporated in the foodscape literature particularly neither.

The idea of expanding the understanding the of food literacy to cover also the farm side part of the farm to2fork chain is in line with the increased interest in Nature Based Solutions (Maes & Jacobs 2017) that is dealing with the challenge of increased disconnectedness between man and nature. For the context of the kindergarten Uhlmann er al (2018) has been studying links between the foodscape that surrounds us in the environment and our attraction for living systems and nature. According to Uhlmann er al (2018) connection with nature has been shown to benefit human wellbeing and promote pro-environmental behaviours.

The idea that nature includes for instance urban farming and gardening can potentially be an integral component of urban foodscapes – for instance those that unfolds in and around a kindergarten - has increasingly been studied. There is evidence of the practices of school gardening (Heim et al 2011; Evans et al 2012; Jaenke et al 2012; Ratcliffe et al 2007; Wistoft 2013), and on-site gardening has also been reported – so-called edible school yards (Murphy 2003). In some cases, the cooking activities are linked to outdoor school activities (Bentsen et al 2009; Maller 2009; Mygind 2009). Furthermore, there is some evidence that hands-on school gardening may affect food intake. For instance, Ransley et al (2010) reported an increased consumption of vegetables in schools that had gardens compared to those that did not. The Sapere approach to taste education of children in school and kindergarten has been shown to have an effect on the determinants of food intake. Mustonen et al (2009) showed that children who participated in the training improved their skills in identifying tastes and odours and in characterizing foods. This effect was found in particular amongst younger children. The study by Mustonen et al (2009) showed that sensory education activated children's odour and taste perceptions and improved their ability to describe sensory properties of food. Sensory education has also been shown to be able to decrease food neophobia score and increase the intention to try unfamiliar foods in 8–12-year-old children (Mustonen & Tuorila 2010). Reverdy et al (2010) showed that the effects of taste education could be sustained over time. However, such new approaches to learning that view the food as a learning opportunity tend to interfere with the practices of the institution in which they take place, often requiring new curricular plans and a change of routines and supplies. As such, it is important to examine the extent to which such new practices can be implemented in the daily life of the kindergarten.

METHODS

The study was conducted in a Danish kindergarten in the city of Aalborg. The foodscapes in kindergartens in Denmark have changed dramatically over recent decades due to government regulations. Firstly, since 2004, Danish kindergartens have been subject to a regulation that requires the adoption of kindergarten-specific curricula. These curricula are targeted at children aged 0–6 years in day care and focus on six thematic areas: personal development, social skills, language, motor skills, nature and natural phenomena, as well as cultural expressions and values (Ministry of Social Affairs 2004). The regulation does not mention food, nutrition, and healthy lifestyle specifically, but it has acted as an opportunity to address such issues in many cases. Initially, there was little tradition of serving meals in kindergartens, and children would instead bring their own packed lunch every day. However, due to a government decision, it has been compulsory for municipalities to offer the parent the possibility of voting for a lunch arrangement since 2010. According to this regulation, lunches complying with official guidelines should be available in all municipal and private kindergartens unless a majority of parents vote against it. Lunches are paid for by the parents, but low-income families can in certain cases be eligible for a free pre-school meal entitlement. It is estimated that approximately 30% of kindergartens have a lunch arrangement in operation either as an in-house system or a delivery system (Glavind 2013). The government regulations have fuelled an increased focus on institutions as places for healthy eating and have increased the focus on the responsibility of kindergarten staff as supporters of new types of foodscapes that link the lunch arrangements to the learning potentials in kindergarten.

The Danish kindergarten system has undergone important change over the past decades. It is offered all over the country and covers time before children enter the compulsory educational system. Children attending kindergarten are three to five year-olds. The majority of Danish kindergartens are public and although it is not compulsory to attend a kindergarten most children do. The workforce in kindergartens are mainly professionally trained pedagogues normally with a 3-4 years background from a university college in pedagogics. Unlike the schools kindergartens does not have formal responsibility for teaching. Instead the activities aims to stimulate the social, linguistic and fine motor skills of the children which are expected to be obtained mainly through play. All kindergartens are requested to describe their curricula activities in learning plans. Food service and nutrition education has not traditionally been a part of the activities in kindergarten but this has gradually changed. With the "lunch arrangements in kindergarten bill" from 2009 the Government for the first time introduced a framework for how collective foodservice voluntarily could be offered in kindergarten. The bill mainly deals with the practicalities of serving lunch and not with the pedagogical potentials of integrating food activities into the pedagogical space of the kindergartens.

The increased interest for the role of food service in the Danish kindergarten system coincide with an increased in interest in untapping the potentials using food and nutrition education to develop the literacy of children through the integration of pedagogical food activities with meal activities. It also coincides with an increased attention given to nature based solutions and the tradition of using the natural environments and opportunities to develop outdoor learning activities as part of kindergarten activities.

DAGMAR INTERVENTION

The intervention was developed to explore the effects of lunch arrangements in Danish kindergartens. The name of the intervention Dagmar ("Dannelse og sundhed gennem bedre madrammer i børnehaver") was constructed as an easy to communicate acronym to signal the idea

of food, literacy and health among kindergarten aged children. Dagmar is at the same time a traditional Nordic girls name with positive associations to words like "joy" peace" and "adorable".

It was developed following a participatory approach in the Fuglsang kindergarten in the Danish city of Aalborg to meet the needs that has followed in the wake of a growing interest among pedagogues, parents, politicians, health promoters and the media on the potential positive effects of introducing publically delivered meals in kindergarten. The intervention was evaluated using both a formative approach as well as using a summative approach. The formative part is reported in this paper. Results from the summative research can be found in the research database of Aalborg University (https://vbn.aau.dk/da/projects/the-learning-preschool-foodscape).

The purpose of the intervention was to develop and test programme elements that could contribute to the creation of food literacy through hands-on food activities. The intervention was developed using an action research approach (Lewin 1946). This approach is a participatory research strategy in which researchers and practitioners are mutually engaged in the development of the intervention, while at the same time researchers collect empirical data for evaluating the programme. According to Danish standards, the kindergarten is medium-sized, with approximately 50 children, and is based in an old detached house with a spacious garden. It is located in a residential area of the city. The kindergarten is open to children aged 3–6 years and has 11 pedagogues, 1 manager, 2 assistants, and 2 kitcheneurs. In the kindergarten, there is room for 40 children in addition to day care for 10 children aged 0–3 years. However, the Dagmar intervention targeted only the kindergarten-aged children.

INTERVENTION COMPONENTS

According to the extended foodscape view of the kindergarten, the Dagmar intervention targeted two important dimensions of the kindergarten foodscape: the activities evolving around the food and meal provision taking place around the daily lunch arrangement and the learning activities evolving around the hands-on food activities. The idea was to create a consistent and meaningful foodscape encompassing both the meal situation as well as the learning activities of the kindergarten in relation to food, nutrition, and eating.

The hands-on food activities of the Dagmar intervention involved eight different educational activities: Individual Book of Season, Kindergarten2nature, Is Nature Edible? The potato growing project, Our own Gardening program, "From Planting2Harvest", "End of season" theme, Preserving4Winter, and Taste Workshops based on the Sapere approach. The data collection was structured in two pillars and involved *observation* and *focus groups* with kitchen assistants and kindergarten pedagogues. The kitchen assistants – the kitcheneurs – are responsible for the backend activities in relation to food service, whereas the pedagogues are responsible for the frontend pedagogical activities, including the serving of the food, the staging of the meal itself, as well as for the learning and pedagogical activities in relation to food, healthy lifestyle, and eating.

FOCUS GROUP INTERVIEWS

The focus group interview was carried out based on a protocol developed for the PERISCOPE kindergarten study (Sansolios & Mikkelsen 2010, 2011; Caroli et al 2011). The focus group meetings was conducted after the intervention. The audio recording from focus group interviews was transcribed verbatim and the text was condensed into consistent meaningful units. The purpose of the focus group interview was to provide insight into employees' knowledge, skills, abilities, and desires, as well as their views on the topic of food in the kindergarten. Secondly, the purpose

was to focus on the factors that help to promote or inhibit the educational work of integrating the subject of food into the six mandatory topics in the curriculum and identify any pattern of agreement and disagreement among kindergarten pedagogues about the possibility of this integration.

The interview guide covered the pedagogues' perceived responsibility for food topics as well as the perceived opportunities and constraints in the structural kindergarten environment. The topic of the interviews was children's lifestyle; eating patterns and food literacy; the types of food; eating practices and preferences; the role of knowledge, skills, and competencies; the interface between the kindergarten and the family foodscape; and role modelling, and in order to decrease the drop-out rate the interviews were carried out in connection with already arranged staff meetings. The interviews took place in the kindergarten and lasted approximately 90 minutes. Participants were informed two weeks before the scheduled focus group interview after the manager had been informed about the necessary length of time. A Dictaphone was used in the focus group interviews, and conversations were subsequently transcribed by condensation of meaning.

Different technology assisted options for thematic analysis was considered including the NVivo software package for qualitative data analysis. However due to the perceived constraints in terms of time consumption for learning, lack of university technical support and limitations in the budget this technology was not chosen.

OBSERVATIONS

Observations based on video recordings were used during lunchtime meals to supplement the findings from the interviews. For these recordings, two camcorders were set up to record the practices around the lunch meal in pictures and sound. Observations were made and filmed during the intervention. The recording functioned as indirect observations, in the sense that the participants observed were aware of the fact that they were being filmed but were not aware of the particular theme. The main advantage of using a camcorder is that the camera captures both sound and behaviour (Lokken & Søbstad 1998). The observer can thus replay the recording after reflecting on some sequences, thus extracting more than would be possible through direct observation alone. For instance, there could be sequences that at first seem random but that later emerge as meaningful when repeatedly replayed and reflected on. Parents were asked to provide their consent that children were filmed during the meal situation and were informed that this was part of a research programme aimed at developing learning around food and nutrition. All parents gave their written consent to the Dagmar project coordinator in cooperation with the kindergarten manager. The observation was performed based on the traditions used in visual ethnography. The purpose of the participant observation was to gain insight into the interaction between the children and kindergarten pedagogues taking place in the foodscape evolving around lunch. The focus of the observation was the interaction observed not only between the individual and the food but also between everyone at the table and their mutual interaction around the food. An observer was present during the lunch situation, and field notes were written while they were fresh in the observer's memory. The video recordings from the meal situation were transcribed and the text was condensed into consistent meaningful units. All interviews and observations were written in Danish and were subsequently translated into English.

Finally, the data collected were analysed using the conceptual foundation as analytical inspiration, and the findings were grouped thematically according to three spheres that were believed to be able to explain important dimensions of the kindergarten foodscape: the

kitchenscape (the backend activities taking place with the kitchen as the centre), the frontend mealscape (centring on the lunch practices), and the frontend learningscape (unfolding around the pedagogical-oriented hands-on food activities).

FINDINGS

A number of themes emerged from the interviews and observations, and altogether they paint a picture of the kindergarten foodscape and its potential for contributing to learning and food literacy. Building on the idea of a kindergarten foodscape the findings has been broken down into three themes – three *-scapes*: The kitchenscape, the mealscape and a potential learningscape that stretches and links with the kitchenscape and the mealscape. The idea of an overall architecture and model for the kindergarten foodscape has been illustrated in figure 1.

MEALSCAPES AS LEARNING OPPORTUNITIES

Eating at lunchtime is the practice in which food is served to satisfy nutritional and physiological needs. The Dagmar intervention demonstrates how it can also be seen as an opportunity for learning where eating – and even growing and preparation of food is integrated in a coordinated approach to create a learning experience. The lunchtime meal is made in the kitchen but is served and staged primarily by the pedagogues. The types of food served are guided by a range of considerations. Meals should comply with official recommendations and with certain financial restrictions. In addition to seeing food provision as a static phenomena, the Dagmar intervention involved elements of increased exposure to new types of food in order to expand food diversity. As a result, children will, to a rather large extent, experience a different kind of cuisine than the ones they find in the family sphere. Therefore, unsurprisingly, the interviews pointed to the fact that the pedagogues' enactment of responsibility and taking an active role in the children's food literacy was challenged by children's food preferences and likings brought from home. These insights were seen as important learning insights for both of the two professions kitcheneurs and pedagogues. According to the pedagogues, children's food preferences changed during the intervention and so did their interest in the foods and ingredients used.

In particular, the observations from the dining situations showed that both kindergarten professions use different approaches to deal with a child's individual taste preferences. While the kindergarten pedagogues seemed to accept that the child did not initially like the food and as a result would offer an alternative, the kitcheneurs used a targeted and more hands-on type of approach. They would use the ingredients in the food to make the experience concrete and recognizable in order to encourage the child to taste it. The following dialogue captured by observation of a child and a pedagogue illustrates the point

Do not like it!

Just eat some bread, but you have not tasted it yet.

So you cannot know whether you like it!

Later, a kitcheneur enters and sits down at the end of the table. Like the pedagogues, she eats what is referred to as an educational meal in the kindergarten every day. The eating arrangement is based on free seating, and pedagogues have the overall responsibility of looking

after a specified number of children and their eating. This snapshot from observations of eating events illustrates a dialogue in the common foodscape where learning about sensory properties, neophobia, and preferences takes place in an informal manner.

Kitcheneur: Now you need to start.
Child: I do not like it!
Kitcheneur: Have you tasted the gratin?

The child nods and the kitcheneur continues:

Do you know what it's made of? It is made
like thick pancakes! Try to taste.

The kitcheneur then takes the girl's knife as she says:

Shall I cut it up in little bits?

The statement underlines the fact that there needs to be an inter-professional consensus as well as an informal organizational structure including time set aside for creating a learning situation around the meal situation. It also shows that kitcheneurs has an important role to play – not only as providers of meals – but as important role models in the learningscape that can assist children in overcoming some of the constraints and barriers related to neophobia. In particular, data from the focus group discussions showed that there were differences of opinion between pedagogues and kitcheneurs, but also that there was agreement on the need for a focus on the educational challenges and opportunities related to preferences, neophobia, and liking. A few quotes from pedagogues capture from the interviews illustrates the perceived need for training

It's an advantage if we could seek out more knowledge about it,
or have the opportunity to gain some more knowledge
We do not have the same knowledge about food as kitcheneurs. We do not have the training.
And in some context or other, one can say that now food is in focus here.

These discussions underlined an apparent need for complementarity and professional interaction between the two professions in the kindergarten. In line with this discussion, the focus group also touched upon the theme of responsibility for children's eating patterns and food literacy. Both pedagogues and kitcheneurs expressed the view that, according to them, there are some important limits between the perceived kindergarten foodscape and its relation to the family foodscape. The fragile borderline between the two foodscapes became apparent as a theme in the interview. An important insight was that pedagogues prided themselves on having a more professional attitude to feeding styles than the parents, in the way that they would not be affected by emotional barriers, for instance, in the case of disliking and neophobia. Many of the staff were aware that the children seemed to react differently towards food served at home compared to the food served in the kindergarten. The kitchen manager pointed to the amount of attention given to each child in the dining situation as a possible cause. In the kindergarten, children do not experience the same amount of attention due to the number of children present in the meal

situation. But the kindergarten seem to offer something in terms of food literacy training that is not found at home. As a pedagogue puts it during an interview:

We do sometimes have children who do not eat anything
at home, but cannot stop eating when they are here.

The statement suggests that the social environment is important and that there are clearly differences between the conditions in the domestic and the kindergarten foodscapes. It also suggests that the kindergartens approach to food literacy building is a more professional than emotional one than that provided by the parents. These differences need to be kept in mind by both professions and can ideally form the foundation for a situation where food and eating are put on the agenda in the family–kindergarten cooperation. The home-kindergarten difference is also found in the 2 interview quotes from a pedagogue and a kitcheneur respectively

if there is a child who does not eat at home, I could imagine that there was a lot of focus on the child at home, and so much focus could mean the child does not want to – but it's not like that here

when we experience children who do not really eat, they do not
really get a lot of attention from us, and then suddenly they are sitting and eating.

These statements point to the importance of collectivism and the power of the social aspect in fostering food literacy. The question of the role of the kindergarten professions in shaping eating patterns of children was seen to be an important topic. Pedagogues felt that their responsibility was a part of their enactment as role models. Video observations showed several situations where kindergarten pedagogues acted as such, in some situations by performing verbally. In other cases, the situation demanded that an action was carried out while the child was being encouraged to eat a particular food. A situation was observed where a child passed a plate with rye bread to another child. She pointed to the bread and took one piece, and then gave the plate to the pedagogue and finally sent it further around the table. The plate continued quietly around to all the children without the pedagogue intervening.

In the above case, it was enough that a child visually pointed to a piece of bread, and the kindergarten pedagogue then follows up on the action by simply passing the plate around. In this case, no verbal communication took place as to what was going to happen. A similar event took place at another table, which was accompanied by a verbal message: The kindergarten pedagogue served for the children while saying:

Start by taking a little warm food and then
I will give you some more, so it cools down.

She then pointed at the plate with rye bread and said at the same time to the child who was closest to the plate:

You can take a piece of rye bread!

The child took a piece, then another child stretched over to reach the plate. The kindergarten pedagogue looked and said:

And then you pass the rye bread on.

The child gave it to the pedagogue, who finally put a piece on three of the children's plates. The interactions showed that pedagogues perceived themselves as having a responsibility for the children's eating practices. Kindergarten managers and pedagogues generally agreed that they had a responsibility due to the fact that the children were in their care for a substantial part of the day. But there was disagreement as to whether this responsibility also included ensuring that the children always ate the recommended types and amounts of food according to nutritional guidelines. The pedagogues were confident that the kitchen manager, from the backend perspective, would arrange for cooked meals that lived up to current nutritional advice. However, seen from a frontend perspective, the question was discussed of whether the child would eat the food on the table, how much the child ate, and how they as kindergarten pedagogues should encourage the child to eat the food that was served.

During the time that the children are in kindergarten,
I have responsibility for what kids eat in the kindergarten.

... If the child after two bites does not want to eat more – then I do
not think that we have fulfilled our responsibilities.

It is not ok to say: well, that is just fine then. (Pedagogue)

The above statements were the prelude to a lengthy discussion about kindergarten pedagogues' attitudes towards responsibility, limits, and frustrations of not knowing *how* to get kids to eat when they encountered food preference- and liking issues. Two of the kindergarten pedagogues showed a clear position regarding their understanding of responsibility but also where their limits were:

I want to encourage and teach the child to eat,
but if the child clearly says no, I cannot force them.
I will do a lot to ensure they eat food, but there are also limits. (Pedagogue)

The discussion continued for some time, but generally the kindergarten pedagogues were looking for answers to ways of handling the situation of children refusing to taste and eat. Three pedagogues expressed the following opinion:

It's a good educational challenge to go through
the process with the child when the child eats food.

The focus group interviews showed that if the children did not like the food, they were more likely to ask more about what ingredients the meal consisted of, and, as such, dislike seemed to contribute to creating a language and a vocabulary around food and meals. If they liked the food, the conversation briefly confirmed this view. This fact suggests that unfamiliarity with food and liking seem to be closely related and that not liking the food initially tends to evoke curiosity. The pedagogues expressed the view that, as a result of their perceived responsibility, they felt it was

up to them to take the initiative to talk about the food. The following are four statements from the focus group interview:

If I start talking about food, they continue. But they do not start the ball rolling.
When the child says, "I do not like that," I reply: "What do you like then?"

I'm sitting with the same, eldest children every day and they talk a lot about food.

But maybe it has something to do with the fact that I talk about food a lot!
But it may also be because we have made the food project.

The children are very interested in the food and if they like it
they often say: "It tastes good."
And if they do not like it, they ask what' s in it. (Pedagogue)

Several of the pedagogues reported that children seemed to improve the ability to speak up if they liked the food. In addition, these opinions were passed on directly to the kitchen manager. This very honest and straightforward response was observed during the lunch meal: suddenly one of the children turned around and looked at the kitcheneur and said loudly as she nodded:

It tastes good!

The kitcheneur immediately replied:

Oh, thank you!

A NEW ROLE OF THE KITCHENSCAPES – AND THE EMERGENCE OF THE KITCHENEUR

The Dagmar intervention demonstrated how a new role of food professionals develop can develop. This new identity – the kitcheneur takes responsibility outside the traditional domain of food professionals that is constrained to the kitchen. Kitchenscapes play traditionally a less visible role in the daily life of the kindergarten compared to the frontend activities that are the spaces where children spent most of their time and is where parents mainly experience the sense of a kindergarten. Kitchenscapes in comparison are more closed spaces where food is received and prepared and considered as a professional space where food service professionals are in charge. The Dagmar intervention showed to be able to challenge that.

During the Dagmar intervention more room were created for the food professionals and more interaction was developing between pedagogues and food professionals. Children developed their interest in talking about the sensory properties and the type and names of the fruits and vegetables when these were delivered from the food supplier. These events occurred by themselves in that the children gathered around the boxes when they were delivered. Children were eager to share what they recognized and to demonstrate that they could remember the names of the different fruits and vegetables delivered. With the help of the kitcheneurs, this developed into a daily routine, depending however on the time available in relation to the preparation of the afternoon snacks. According to the pedagogues, their focus on the food-related issues during meals was also strengthened. One example was that pedagogues and the kitcheneurs developed an informal

tradition of making small guessing exercises where children were invited to guess the ingredients in a dressing or a herb in a dish.

HANDS-ON FOOD ACTIVITIES IN THE LEARNINGSCAPES

Traditionally, kindergarten food is mainly thought of as a provision of calories and nutrients that can satisfy hunger during the day away from home. Moving beyond that perspective and including a learning perspective is a novel approach for most kindergartens, since it requires linking the food practices with the pedagogical spaces. In the Dagmar case, the pedagogues, the management, and the kitcheneurs were for obvious reasons positive towards this, since the concept was part of the inclusion criteria. As a result, the idea of integrating learning in the pedagogical practices was not completely new, and their insights helped to form the actions taken later in the action research process.

The creation of a learningscape evolved in particular around two important activities: the gardening/seasons activity and the taste workshop. The taste workshop for children was developed using the principles of the Sapere method, and the idea was to have children actively involved in the tasting of food and in the discussions about ingredients in relation to what they were able to recognize. A table was set up with fruits and vegetables, and the children were able to try to link the fruits or vegetables' external appearance in raw form with the carved shape on the plate and with the smell and taste. Several of the children seemed to overcome personal barriers by tasting something they had not tasted before. The pedagogues commented that a few of the children who took part in the workshop never usually tasted unfamiliar foods and that she was very impressed by these children's courage to taste during the workshop.

The children were actively discussing during taste tests, not only about how it tasted and how it felt in the mouth but also about other dining experiences they had had and that had contained some of the ingredients in front of them. As taste samples were eaten, there was a growing unrest amongst the children, and many of them wanted to have more of one or the other kind of fruit or vegetable. Observations from the taste workshop showed that the children often had difficulty finding words to express themselves, and they often echoed words they had just heard being used. The children had no difficulties in recognizing sweet, sour, or salty. However bitter taste was perceived as unfamiliar and described as sour. In relation to the mixed basic tastes, children were much divided on taste preferences. It was obvious that they had already developed individual taste preferences but also that they were able to accommodate and accept others' taste preferences.

An important part of the joint workshop for the pedagogues and the kitcheneurs revolved around the diverse aspects of taste: What is taste? Why do we have different preferences? How can taste be defined? How do you explain taste? How can we help others explain a taste? These questions and others were discussed during the workshop. Many of the questions came up again and again during the day. In general, both pedagogues and kitcheneurs felt that the examination of the various basic tastes was important:

> *Exciting having to put the different basic tastes into words, and exciting to experience that flavours could change the perception of taste*.

The taste experience lessons provided not only recognition and understanding of taste but also the dissemination of taste. According to the participants, the taste lessons gave them the ability to be better in helping the children to verbally define the flavours they had and gave them the

feeling that they could communicate the diversity in taste to the children. One kindergarten pedagogue added the following comment:

> *I have focused on taste and it gives me the opportunity to bring my own knowledge to light – and use it with the new knowledge.*

Both pedagogues and kitcheneurs felt that their ability to communicate the diversity of tastes to children had improved. When asked what had made the biggest impression, one of the kitcheneurs made the following comment:

> *the kindergarten teaching staff were so interested in the course and then talked about it.*

The event based on the gardening project evolved around children's picture books of the season. The books acted as log books of what the children did, and illustrations show what was most important for the individual child. They regularly drew or painted the experiences they had had in the sub-projects. Some images were very detailed, with straight rows of vegetables filled with small seeds, while other drawings showed that they watered the vegetable garden – a drawing with a lot of water being sprayed. While the children worked with their imagery, the kindergarten pedagogues spoke with them about their experiences, what they had made, where they had worked well, and about future work in the vegetable garden. This recurring articulation of the experience gave the children the opportunity to recall what they had worked with and put into words what they had done and thus process all the new knowledge they had gained. Besides this, the picture books gave the children a visual opportunity to see the vegetables developing backwards; that is, they could through pictures and see how much, for example, the radishes had grown since the last time they drew them and thereby see a connection between the seed and the final product.

An important part of the gardening project was the development of coarse and fine motor skills development and physical work, the subsequent drawing and painting tasks played a role here. In addition, the language training, including the articulation of dining experiences and new words, was a part of the gardening events. The gardening project was in some cases extended outside the kindergarten to include learning about natural phenomena and searching for wild plants and herbs on forest excursions. An additional extension included a farm2fork project where the children were taken on a farm excursion.

The hands-on food activities were seen to play an important role in the development of social competencies. For instance, in the potato project, the children needed to cooperate. They were grouped in pairs, one from the eldest group and one from the youngest group. This meant that the youngest could learn from the eldest and the eldest were able to learn to help the youngest. Additionally, this partnership also ensured that there was almost always one from the group who could care for a potato bucket, and when they were both present they had to share the responsibilities and tasks.

The vegetable garden developed into a popular place to be, and the children spent a considerable amount of time looking, smelling, and tasting under the guidance of the pedagogues. The garden came to play an important role as a kitchen garden in contributing to the food service. The pedagogues spent time talking about the herbs and vegetables when they went there. They would talk about the importance of watering the plants if it did not rain, and the children would learn about the principles of growing vegetables and the role of sunlight in the biological processes.

In addition, the garden was used as a stage for creating a food language, and children and pedagogues would talk about the vegetables' names, colours, and sizes. The vegetable garden was organized around the seasons and especially the harvesting and collecting of the tangible outputs from the gardens were important events for the children. The digging up of the potatoes in the autumn was a major event where children would compete over which of the potato bins contained the most potatoes and which had the largest potato. In particular, size was generally very important for the children, and the largest squash and beetroot received great admiration. The natural endpoint was the outdoor preparation of the vegetables for a dining session that marked the final step of the gardening project.

DISCUSSION

DISCUSSION OF FINDINGS

The study examines the opportunities as well as constraints related to developing the kindergarten foodscape to an arena for food literacy and food learning. The themes can be viewed as themes that should be taken into account by food systems strategists, urban food strategy planners, food systems advocates and learning and curricular experts when developing strategies for the design of future foodscapes in kindergarten.

The Dagmar study points to the promising opportunities for taking advantage of some of potentials of the kindergarten to develop food literacy by using both the provision as such but also the learning and teaching opportunities that is embedded in the meal provision. By taking the idea of food environments and foodscape as the point of departure it contributes to developing a broader understanding of the kindergarten as both a place for eating - and for learning about eating. The study also contributes to an understanding of professions in this transition to an extended view of the kindergarten foodscape. By examining both the views of the food professionals and the pedagogues as well as the perceptions of the children it attempts to understand the kindergarten as a multi actor space – and provide directions for the future development of kindergarten foodscapes.

The Dagmar study illustrates the diversity and complexity of the food reality in the kindergarten environment. Social practices around the eating at lunchtime blend in with moments of learning and with instances of cooking related to the preparation of the meals for the lunch table. The data indicate that the study case has been changing the way cooking and pedagogical practices work as a result of the Dagmar programme.

The findings suggest that pedagogues and kitcheneurs, in relating to this mesh of a foodscape, would refer not only to how they understand the food reality but also to how it could be understood as a scenario – a desired future in which food, nutrition, and healthier lifestyle issues could be dealt with in new ways in the kindergarten. It is a particular strength of the foodscape metaphor that it is able to handle both the real and the imagined world. By relating to the foodscape as it is, pedagogues and kitcheneurs would make frequent reference to both constraints and hindering factors as well as perspectives and opportunities.

It should be noted that the current paper do not report in quantitative terms measures of food literacy. Rather it tries to understand the phenomena and explain how food literacy might be created using different learning approaches in a kindergarten setting.

DISCUSSION OF CONCEPTUAL FOUNDATION

Conceptually the Dagmar study aims to make a contribution to the emerging research field of foodscape studies. The conceptual understanding of the kindergarten seen as mutually complimentary –scapes has been illustrated in figure 1. It underlines the interrelation between the three important dimensions of food in the kindergarten identified in the study: the social practices of the lunch – the meal scape, another one the learning practices related to the hands-on food activities – the learningscape, and the third is the cooking practices related to preparing meals- the kitchenscape.

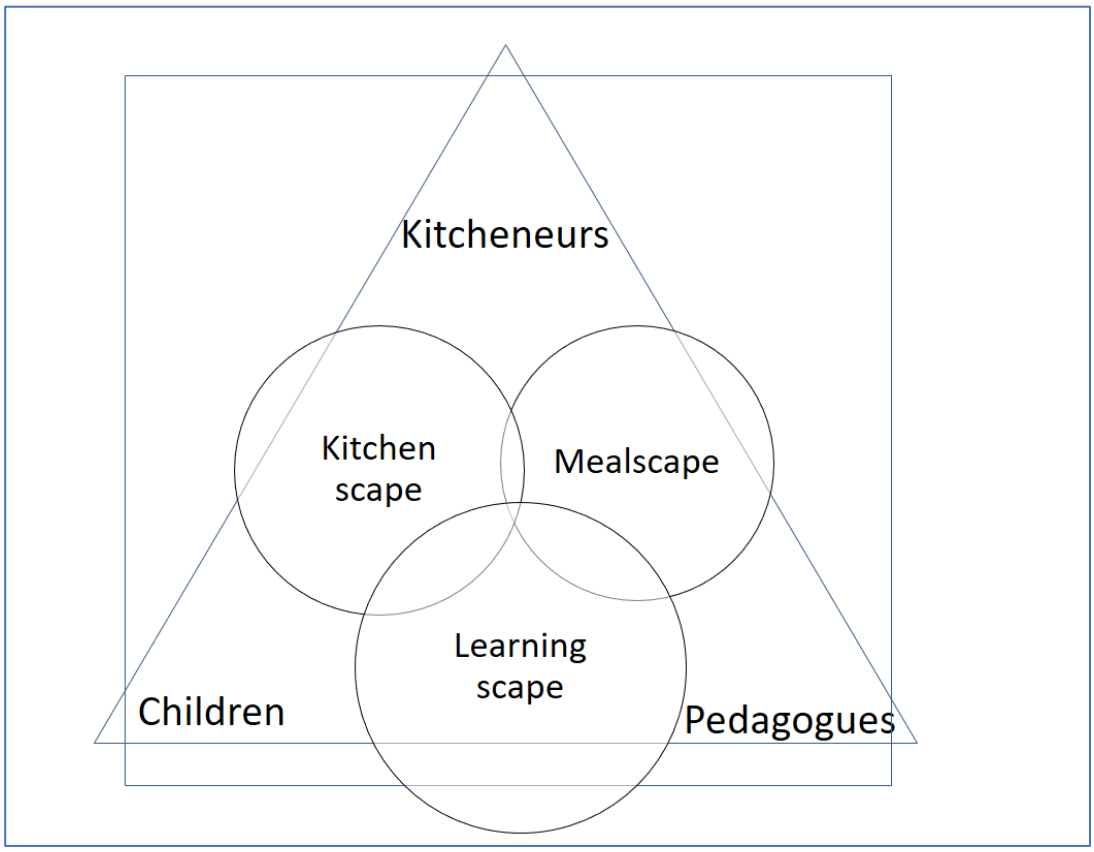

Figure 1. An extended triangular view of the kindergarten foodscape. The figure proposes a way to illustrate three important dimensions of the kindergarten: the kitchenscape, the hands on learningscape and the mealscape. The extended view identifies three important actors and suggests a close interaction between the three: the pedagogues, the kitcheneurs and the children. The triangular view underlines that food in kindergarten should be both about provision of food as well as about learning about food. The outside box illustrates how the kindergarten foodscape can be seen as being in an interplay with both outside actors and structures. The figure finally aims to illustrate that the learningscape in the ideal case expands to cover the meal and kitchen parts of the kindergarten as well as the outside natural environments for instance gardens and other nature-based activities

By looking at the data through the metaphor of foodscapes it becomes clear that the *kitchenscape* has the potential to expand and engage with both the *learning*- as well as with the

mealscape. However, an important precondition is that interdisciplinarity among the two key professions in the kindergarten – the kitcheneurs and the pedagogues – is developed. It should be noted though that the interviews do not reveal the same level of detail with regard to kitchenscapes as is the case for the mealscapes and the learningscapes. This is partly because kitchenscapes in general play a more backend role compared to the pedagogical space. While the learning- and the mealscape can be said to have a frontend nature in the sense that they are based around very visible social practices, the kitchenscape is more closed in nature due to restrictions in terms of accessibility.

The FAMM approach suggested by Gustafsson et al (2006) argues that the meal can be understood as attached to the room, the social aspects, the food, and the logistics. This way of thinking seems to fit well with the foodscape way of understanding food in the kindergarten. As argued in the literature review by Andersen and Holm (2013), there is a need for a deeper understanding of the food culture in day-care settings and in particular how a pedagogy around the meal can be developed. Andersen and Holm argue that the notions of food literacy and food "bildung" are important as concepts for understanding the added value of serving food in kindergartens. Internationally, more efforts are being made to explore the potential of hands-on food activities, as pointed out by Sandell et al (2016), with the Sapere taste literacy approach being mentioned as a prominent example.

The Dagmar study contributes to the growing number of papers in the emerging field of foodscape studies that is continually evolving. An increasing amount of studies have over recent years been exploring the opportunities for promoting heathier eating and food literacy in kindergarten including the Periscope, the ToyBox and Frida studies (Caroli et al 2011, Nethe et al 2012, Androutsos et al, 2014, Mikkelsen & Mikkelsen, 2016). Conceptually studies have been using either a settings, a food environment or a foodscape approach to better understand the opportunities in food and eating in kindergartens (Story et al 2008, Crawford et al 2008, Lynch 2015, Sandell et al 2016, Dyment et al 2017). All together they can be seen as approaches that put less emphasis on the responsibility for behaviour and more on the "out-thereness" by looking at what "places" can do to influence behaviours and outcomes.

In particular, the outdoor part of the Dagmar intervention contributes to the new field of study that is related to the exploration of Nature Based Solutions (Maes & Jacobs, 2017) and the interest in linking food with nature and biophilia. In a kindergarten/school context such approaches has been studied by Dyg & Mikkelsen (2016) and Uhlmann et al (2018). The study of outdoor food activities studied is an important turn in the studies of outdoor activities in kindergarten. Such studies has mainly been dealing movement and physical activity as their primary objective. But, being outdoor also have obvious links with potentials for learning about wild food, agricultural practices and gardening.

DISCUSSION OF METHODS

In discussing the reach of the findings and their transferability, it is important to note that kindergartens can be different in terms of readiness for change. Like all case studies, the findings will depend on the case selection. Taking a diffusion of innovation approach using Rogers (2003) as inspiration, the Fuglsang kindergarten can be thought of as an early mover – a kindergarten that is not average, that is already prepared for action research, change, and innovation. This also means that the transferability of the Dagmar approach to other kindergarten settings may be limited, since the topic of food and nutrition and its position in the daily life of the kindergarten is still controversial and the subject of much debate.

It should be noted that foodscapes vary significantly with socio-economic position of families in the catchment area of the kindergarten, with the conditions internally in the kindergarten and with the local municipality political climate. In the case of the Dagmar intervention these factors are in favour of a successful intervention outcome. As such there a limitations in terms of the transferability of the findings. Drawing on diffusion theory it can be expected that the more ambitious way to developing the kindergarten foodscape that has been shown to work in the case of the Dagmar intervention eventually will diffuse and influence the current norms of food and eating in other kindergartens.

Also, it should be noted that the studied kindergarten is located in an urban area and that new norms in the food area tends to spread faster in urban areas than in rural ones. And, of course the discourse on and practices related to food and eating in kindergarten are deeply rooted in national food cultures as well as in cultures and practices related to kindergartens. This limits the transferability of the findings to other countries.

It should also be noted, that as a case study the Dagmar study methodologically has some limitations since the study was carried out in one case and in a case with favourable contextual factors. Also it should be noted that the sample size for obvious reasons has been limited and that the study did not had the opportunities to study how a more active involvement of parents might had influenced the findings.

It should also been noted that the Dagmar study focused mainly on the internal food dynamic in the kindergarten and not on the home – kindergarten relations. This is a limitation since the family and the parents have a huge influence on children's' eating patterns and preferences.

DISCUSSION OF POLICY IMPLICATIONS

With regard to the interrelation between the two professions, the study identified an interdisciplinary gap that seems to be present between pedagogues and kitcheneurs. An important constraint as seen by the pedagogues to the further development of the kindergarten foodscape was their perceived lack of knowledge and skills in relation to food topics. The more effective and intentional constraints seemed to be related to the perception of responsibilities in relation to children's eating habits. Most pedagogues hold the position that feeling responsible for children's eating behaviour and their food literacy is common sense and should be regarded as an integral part of the profession.

However, creating change in the kindergarten foodscape, as with all change processes, requires capacity building. The study shows that the new opportunities and the extended view of the kindergarten foodscape create a demand for workforce development for the pedagogue profession, since a lack of knowledge and skills among pedagogues was identified as a serious constraint. Similarly, the issue of interdisciplinary cooperation between the two professions was identified as being an important requirement. Both pedagogues and kitcheneurs agree that increased cross-professional cooperation is imperative and that, for instance, joint training activities and workshops for the kitcheneurs and pedagogues could be a good way to achieve workforce development.

The Dagmar contributes to the ongoing international academic debate on how food and eating for the growing for the coming generations can be turned into something more healthy and more sustainable. This rethinking of the food reality in the kindergarten and the potentials for developing new food realities and action possibilities in the kindergarten has been explored in a

number of countries as part of educational and nutrition-related strategies and have at the same time become subject to scientific studies (Hardy et al 2010; Kreichauf et al 2012; Manios 2013). In Denmark, where both parents often work away from home, kindergartens have become an integral part of the welfare state, with 95% of 3–6-year-old children attending such institutions (Moss, 2006). This has created a push towards new types of welfare service provisions, leading to kindergartens increasingly taking on the responsibility for children and their eating. In this context, the present study points to the opportunities for developing the kindergarten foodscape as a space for practice based learning and to apply a learning strategy targeted an increase in food literacy. And according to the results from the Frida kindergarten programme (Mikkelsen & Mikkelsen 2017), there is broad support among parents for the idea of kindergartens playing a more active role in activities related to food and nutrition literacy training.

The Dagmar study feeds into the standing debate that is taking place in Denmark on which measures can be taken to counteract poor eating habits and nutrition related disorders. The food reality in kindergartens is in a state of transition in which important stakeholders seem to be redefining the role that food, nutrition, and healthy lifestyle are playing in the kindergarten environment. Pedagogues and kitcheneurs are the two important professions that are engaged in this process, with the kindergarten manager as a co-player. Findings from the Dagmar programme study show that it is easy for the professions to relate mentally to a space in which food, nutrition, eating, and health are important elements. The study suggests that for both kitcheneurs and pedagogues, the multicomponent view of the foodscape makes sense and that both professions find that they can and should contribute to the formation of food literacy in the foodscapes of the kindergarten.

CONCLUSION

The study shows that it is possible to create a comprehensive pedagogy around the kindergarten foodscape in which food, meals, and eating becomes elements in a learning strategy aimed at developing food literacy among children. The Dagmar intervention proved to be effective in creating a dynamic space around the lunch in a way that combined the serving of food with hands-on food activities for children. Pedagogues and food workers were found to be important carriers of that change. Preferences and likings, knowledge, skills and competencies, as well as the language of children were found to be important aspects of the food reality in kindergarten that needs to be understood and handled by both professions. A trustful cooperation between the two and a mutual understanding of the strengths of each is important. While the pedagogue profession could benefit from a curricular add-on to focusing on food and eating and problem-based learning, the food worker profession – the kitcheneurs – could benefit from learning more about the basic principles of learning and literacy. Here, there seems to be a need for capacity building and workforce development in order to develop the knowledge, skills, and competencies in the borderline between the two professions. The Dagmar programme identified two important areas for action: the social practise around lunch and in-between meals as well as stand-alone pedagogical activities based on a hands-on approach and learning by doing. The study suggests that addressing these determinants is important if the kindergarten foodscapes are to be used to create healthy eating and food literacy. The study provides new insight into the value of hands-on food activities to foster food literacy in the kindergarten. In addition, it suggests a conceptual inspiration from foodscape studies that allows for a better understanding of the complexity of food and eating in kindergarten. The study identifies important action possibilities in the kindergarten

foodscape and suggests that the kindergarten could be an important arena for the promotion of healthier lifestyles and food literacy among kindergarten-aged children.

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