

Young Students' Perception of the Health Perspective in the Norwegian School Subject Food and Health

Merete H. Helland*

University of Stavanger

Camilla Sandvik

Nord University

Anne S. Ask

University of Agder

Eli Kristin Aadland

Western Norway University of Applied Sciences

Abstract

In Norway, Food and Health (FH) is taught throughout compulsory school. Data acquisition for this study consists of 15 interviews with teachers and 26 focus group interviews (FGI) with 4th grade students (9-10 years), from eleven different schools in five regions in Norway. The data provides insight into experiences with FH, perceptions of the health aspect of FH, and learning activities to achieve the subject's competence aims. Students divided FH into "practical sessions", consisting of preparing, cooking, and eating food, and "health sessions", consisting of theory related to different health aspects of food and lifestyle habits. Most students reported that they had few FH sessions at school. Instead, they referred to activities at home, in after-school care, and what parents and grandparents had told them about the subject. High-quality education in school, focusing on dietary advice, food groups, and supporting physical health is important to promote healthier dietary habits in young students.

Keywords: Education, food and health, home economics, primary school, dietary advice

* Correspondence concerning this article should be directed to Merete H. Helland, merete.h.helland@uis.no

Quality health education during a child's formative years is crucial for instilling healthier habits concerning food and physical activity (Mikkilä et al., 2005; Åbacka, 2008). Schools play a crucial role in promoting public health nutrition as they serve all students, irrespective of gender, cultural background, or socioeconomic status. Primary education is mandatory in Norway for children aged six to 16, and home economics (heimkunnskap) was a compulsory subject in Norwegian schools from 1959, before it was revised and renamed “Food and Health” (FH) in 2006 (LK06). In 2020 (LK20) the FH curriculum was again revised to further prioritize practical skills and sustainable food behavior. The FH curriculum is comparable to home economics (HE), domestic science, or home science, taught in other countries.

The School's Curriculum

Required school curriculum in Norway includes core elements for every subject, and for FH, these include healthy diet, sustainable food habits and consumption, and food and meals as an expression of identity and culture. In addition, there are two interdisciplinary topics in FH – health and life skills and sustainability – which are intended to complement and enhance the competence aims of each subject (Ministry of Education and Research [MoER], 2019). Even though the curriculum is being revised regularly, the differences between the competence aims after the fourth year of the program (between LK06 and LK20) are minor, and the emphasis on health education has remained largely unchanged. In LK06, there were 12 competence aims to be achieved by the end of year four, one of which was: “The students should be able to put together and prepare breakfast, school meals and snacks in accordance with recommendations from the health authorities” (MoER, 2006). LK20 has nine competence aims, one of them being: “The student is expected to be able to describe the characteristics of healthy and varied food, and why it is important to health” (MoER, 2019). The interdisciplinary topic of health and life skills includes a curriculum that aims to equip students with knowledge of the national dietary guidelines through meal planning and cooking activities (MoER, 2019).

The Norwegian government determines the subjects, curriculum and hours allocated for each subject, and they are identical across the country. In total, FH has 197 teaching hours, with 114 hours designated for primary school (years 1-7) and 83 hours for lower secondary school (years 8-10). Schools have the flexibility to distribute these hours among the various primary and lower secondary school years. Due to competence aims and assessment requirements for year 4, 7, and 10 in the curriculum, the subject is typically taught in years 4, 6, and 9. However, there tends to be less emphasis on the subject during years 1-4, and significant variation in teaching approaches between schools has been observed (Aadland et al., 2023; Ask et al., 2020; Helland et al., 2021; Holthe & Wergedahl, 2013).

The Nutrition Aspect of Food and Health

Historically, the focus in FH and HE has been on practical work related to cooking (Beinert et al., 2020). Even today there seems to be a stronger emphasis on developing students' practical skills than on mastering the more theoretical elements in the curriculum (Beinert et al., 2021; Bottolfs, 2020; Veka et al., 2018). FH aims to equip students with essential life skills such as an understanding of nutrition and health, sustainable food practices, food culture, and preparation of safe and healthy food. The subject is instrumental in educating students about their overall well-being (MoER, 2019), and is especially related to improved food skills among adolescents (Oogarah-Pratap et al., 2004). Teachers in FH are committed to educating students about diet and health from a health-promotion perspective in the curriculum, but the limited teaching time constrains the extent of this instruction (Øvrebø, 2019). Although previous studies have shown that FH has had limited impact on students' food habits (Beinert et al., 2021; Øvrebø, 2013, 2014), education in FH may influence nutrition (World Health Organization, 2006). The amount of time allocated to teaching nutrition was found to correspond with the nutrition knowledge of boys and girls aged 11-14 (Egg et al., 2020) and the teachers' formal education (Kostanjevec et al., 2012). This is supported by findings from Oogarah-Pratap et al. (2004), who pointed at the HE teacher as the primary source of nutrition information for their students. Elementary schools need to allocate additional resources such as teacher training, time, curricula, textbooks, and equipment, to enhance their nutrition education program (Prelip et al., 2006). Teachers in FH understand the benefits of nutrition information, but often prioritize practical cooking activities (Beinert et al., 2020). A focus on quality education in FH may also contribute to reducing social inequalities in health (Grande, 2019).

Dietary Guidelines

To address dietary challenges, the Norwegian Ministry of Health and Care Services launched a National Action Plan to promote healthier dietary habits among its citizens (Ministry of Health and Care Services [MoHCS], 2017). Norway collaborates internationally to promote healthy diet and nutrition, and the Norwegian Directorate of Health (2011) has established eleven food-based dietary guidelines advocating for the consumption of more vegetables, fruit, berries, fish, and whole-grain products. By adhering to these national dietary guidelines and incorporating physical activity into daily routines, individuals may potentially gain two additional healthy years of life while also reducing societal healthcare costs (MoHCS, 2017). Consumers are recommended to look for the Keyhole symbol when shopping for food, as it may assist consumers in making healthier choices. The Keyhole is a voluntary joint Nordic labeling scheme to identify products that meet certain nutritional requirements, such as lower levels of saturated fat, sugar, and salt, and higher amounts of fiber and whole grains compared to other similar food products (The Norwegian Directorate of Health [NDoH], 2015). The topic of "Keyhole food" is of particular interest to younger students (Øvrebø, 2019). Despite these efforts, both children and adults have a limited intake of fruits, vegetables, whole-grain foods, and fish, while consuming excessive amounts of salt, sugar, and saturated fat (Hansen et al., 2017; NDoH, 2022).

Purpose of the Study

While recent studies have investigated teachers' experiences related to teaching FH in Norway in years 1-4 (Aadland, 2023; Ask et al., 2020), and the impact of framework factors for teaching FH at this level (Helland et al., 2021), young students' voices and their perception of FH have so far been unexplored.

The objective of this study was to elucidate the perception of the health perspective in FH among 4th grade students (9-10 years).

Methods

Design and Selection Criteria

Data was collected through semi-structured, qualitative interviews with teachers and focus group interviews (FGIs) with students (Johannessen et al., 2012; Kvale & Brinkmann, 2015). To obtain a wide selection of primary schools, schools were situated in five different regions in Norway (Southern Norway 2, Western Norway 4, Eastern Norway 1, Central Norway 2, and Northern Norway 2). Participation was voluntary and the goal was to include a minimum of two schools from each region of the country. A total of 20 teachers were interviewed, distributed across 15 interviews (Table 1). The interviews lasted between 30 and 60 minutes. The inclusion criteria were practice schools attached to either the University of Agder, the University of Stavanger, Western Norway University of Applied Sciences, Oslo Metropolitan University, Nord University, or the University of Tromsø – The Arctic University of Norway. We aimed to conduct FGIs with students at the same schools where we had previously conducted teacher interviews (Aadland, 2023; Ask et al., 2020; Helland et al., 2021) to be able to look at concordance, deviations in perception, and experience of teaching FH at primary school. To obtain a representative sample of students, participating students were chosen by the contact teacher. During spring and autumn 2021, 26 focus group interviews (FGIs) were conducted with the students (3-5 students in each group). All FGIs adhered to a standardized format, following an interview guide, and ranged from 15 to 25 minutes in duration. Prior to commencing the interviews, participants were asked to consent to audio recording. Most of the data presented are from student FGIs, although teacher interviews were used to bolster student arguments and opinions. Due to Covid-19 related school closures in Eastern Norway, interviews were conducted solely at one school in this area, and four schools in Western Norway. Declines in student FGI participation from schools were due to a variety of reasons, including absence of teaching in FH, which prompted the invitation of four additional schools. Given Covid-19 travel restrictions, a convenience sample of replacement schools (M, N, O, and P) was included in lieu of schools D, G, H, and J. To ensure anonymity, the schools were given the letters A-P, and interviews with the teachers and student FGIs were coded similarly, with the letter indicating school, and T for teacher or S for student. Quotes from the interviewed subjects are also numbered (Table 1).

Table 1*Summary of Teacher Interviews and Student Focus Group Interviews (FGI)*

Region	<i>Teacher interviews (T)</i>		<i>Student FGIs (S)</i>	
	School	Teacher	School	Student
Northern Norway	A	A1 - A2	A	A1 - A10
	B	B1 - B2	B	B1 - B10
Central Norway	C	C1 - C2	C	C1 - C10
	D	D1	M	M1 - M9
Western Norway	E	E1	E	E1 - E7
	F	F1	F	F1 - F10
	G	G1	N	N1 - N8
			O	O1 - O10
Eastern Norway	H	H1 - H2	P	P1-P25
	I	I1 - I4		
	J	J1		
Southern Norway	K	K1 - K2	K	K1-K8
	L	L1	L	L1-L8
Total number		20		115

To ensure systematic collection of data, a semi-structured interview guide consisting of three sections was used during the FGIs: 1) background information, 2) FH education at their school, and 3) framework factors in the FH subject in year 1-4 at their school. In this paper, a selection of section 2 (FH education at school) will be explored in more detail.

This article aims to elucidate the perception of the health perspective in FH among 4th grade students by analyzing and reporting on data from the student FGIs on the following inquiries:

1. What kind of knowledge have you acquired in the subject FH?
2. Which food did you prepare during practical activities at school?
3. Are you acquainted with the dietary guidelines put forth by the health authorities?

Data Analysis

The data collected from interviews and FGIs were transcribed and analyzed using NVivo (Release 1.7). The interviews and FGIs were analyzed in three stages, based on a conventional content analysis (Fauskanger & Mosvold, 2014; Hsieh & Shannon, 2005). First, the content of the interviews and FGIs was transcribed, before being systematized using codes (nodes in NVivo), and finally the data were interpreted to define what answers they provide to each issue. Student FGI's were thoroughly reviewed and categorized into different focus areas by creating nodes. The nodes used for analysis included: 1) dietary guidelines (familiarity), 2) food and diet knowledge, and 3) dishes prepared (practical work by the students at school). The research project has been assessed by the Norwegian Agency for Shared Services in Education and Research (SIKT/59050). Prior to data collection, both teachers and students received oral and written information about the survey. Parents gave informed consent on behalf of their child, and everyone could withdraw their consent to participate in the study at any time. Names mentioned in the audio files were anonymized in the transcription.

Results

Food Knowledge

Some students showed good understanding of raw materials, food, and cooking, but there was noticeable variability in the knowledge displayed. Parents, siblings, and grandparents were cited as valuable sources of information on FH. For example, PS5 said, "You actually learn more at home than what you do at school from first to fourth." Similarly, FS2 expressed, "I mostly use what my mother taught me, but sometimes I apply what we have learned in FH." One of the students talked about how they roasted cinnamon rolls on a fire in their spare time and indicated, "We've done that many times, but the best was when we had a barbecue because my grandmother made dough like that..."(DS2). Other students also highlighted grandparents as significant resource persons. For instance, PS3 stated, "When I'm at grandma's, we tend to bake a lot and make fruit salad... And very few times at my mother's." Cooking everyday food together with family also provided students with knowledge and skills as expressed by PS5, "I've learned to use the microwave and I've learned to cut up food and stuff like that. My mother taught me." The teachers discussed coincidences regarding who was assigned to teach FH and noted that expertise in the subject was not necessarily required at this level: "You know, it was actually very coincidental when we were working on the puzzle last year in relation to our schedules and such" (ET1), "I enjoy cooking, so I accepted it" (JT1), "It's enough with the everyday competence we have. Teaching food and health in elementary school is not that advanced" (KT2).

For some of the students, there were no clear differences between activities carried out in preschool, activities in FH, at home or at the after-school program, or information provided by visits in class from the school health nurse.

Discussions regarding the students' comprehension of FH lessons showed that they often associated the subject with the notions of health, nutritious food, and sugar-free diets. As one of the respondents expressed, "She [the FH teacher] is concerned that consuming excessive sugar may lead to a sugar rush, which can be potentially harmful" (KS2). Multiple students connected the subject's content with health by carefully selecting and preparing optimal ingredients. For example, CS2 said that the course involved "finding out what is very healthy and what is a bit unhealthy", while MS2 stated that the course involved "cooking and how it is good for health and such" and "what you should eat" (FS2). Students also stated that you could get diseases from food, especially sweet food, since this is not good for your health. The students thought it was important to "learn to cook the healthy food and cook the healthy food in the right way" (NS1). Many students tended to categorize the FH subject into two distinct areas, one centered on food, and the other on health. However, only about six students expressed the interdependence between these two aspects: "We were engaging in physical activity in FH, which is highly beneficial. Prior to this, I was unaware of the positive effects of movement on the body. I assumed that the FH class would primarily focus on topics related to food" (ES1). Another student commented that "After we finish eating...We also need to return to our chairs and take some time to learn about health" (KS2). The students had several associations with the subject term "health", and throughout the

FGIs the word "health/healthy" was mentioned 927 times. The word "health" was often reflected as a stand-alone term and often linked to lifestyle situations: "we talk a little about health. And that it's not good to smoke and sniff and things like that" (KS1), "don't use drugs and such" (MS1), "it makes us get better blood pressure... and better physical health" (NS2).

Practical Activities

The production of gingerbread (cookies) was the most cited activity related to FH in grades 1-4 (see Table 2). During the FGIs, students from seven schools discussed baking gingerbread as a holiday-related activity. However, none of the students mentioned participating in making the dough itself, except for one student who believed that they had done so in both 3rd and 4th grade: "We made the dough, so you just don't remember it" (MS1). The students talked about the shapes they created, and possibly also decorated the cookies: "the dough and everything like that was ready, we just created shapes and put them on a tray" (PS2).

Several schools made fruit salad as a learning activity. Students from six schools recalled participating in this activity (see Table 2). Fish was only mentioned as part of the menu at three of the schools, while cakes, pastries, waffles, and sweet recipes were frequently prepared, according to the students. Some schools also allowed students to bring sausages, burgers or cheese sandwiches from home when having outdoor education.

Table 2

Dishes Students Recalled Preparing in Grades 1-4 in their FH Class

Dishes	School
Fruit/Vegetables	
Fruit salad	B, C, M, E, F, K
Vegetable stew	K
Vegetable soup	M, E, F
Tomato soup	A, F, N
Wok	C
Bakery	
High fiber rolls of bread	B
White rolls of bread	F
Pizza	A, B
Cheese sandwich	E
Scones	F
Fish	
Salmon	A, C
Fish and chips	C
Meat	
Moose meat (Sami)	C
Bidos (Sami)	F, K
Reindeer meat in pita bread (Sami)	B
Hot dog	C, O
Cakes and pastries	
Pancakes	B, K
Norwegian pancakes (thin)	B, C, P
Waffles	C, M, K
Muffins	A, F

Buns	A, B, P
Gingerbread cookies	C, M, E, F, O, K, L
Brownie/chocolate cake	C
Apple pie	C
Serina cakes (ready-made dough)	P
Shortbread	K
Other	
Soup	M, K
Blood pancakes (Sami)	L

Note. Food items brought from home to be prepared at school are also included.

Knowledge of Dietary Guidelines

When asked if they were familiar with the dietary guidelines, only 22 out of 115 students gave positive answers. Initially, the other students indicated they were not familiar with the dietary guidelines. However, further conversations revealed some knowledge about what foods to consume and what to limit. This indicated that students were aware of the content of the dietary guidelines. For example, students shared that they should "eat fish at least 2-3 times a week" (BS1), "eat a lot of healthy food, that you must eat five-a-day, three portions of vegetables and two portions of fruit" (BS2), and that "it can be wise to eat vegetables and berries, but not too much sweets" (MS1). The teachers did not plan their teaching based on the dietary guidelines, but the lessons were mostly based on their own idea of healthy food and common sense as articulated by AT2 and KT2, "We use common sense", and "We are focusing on that it should be healthy". The students most often associated the term 'dietary advice' with healthy eating as revealed by PS2, "you shouldn't eat unhealthy things", and the term most of them knew was five-a-day, referring to the dietary guideline to consume five portions of fruit and/or vegetables a day. During the interviews, students at six of the 11 schools told the interviewer that they were aware of what the five-a-day guideline entailed. Teacher B1 said that economy was essential for the choice of ingredients as indicated, "due to its high cost, fish has been used scarcely, unfortunately...the same goes for meat."

Several students drew a connection between the dietary guidelines and the Keyhole labeling. For instance, respondent FS1 articulated: "the keyhole, it's food you should eat." LS1 knew that oatmeal was marked with the keyhole, and student K1 talked about the dietary circle. At two of the schools, it also emerged that the students had been working with the plate model as they shared that "...there are three parts... vegetables and meat and ...potato" (NS2) and "The healthy eating plate show how your diet ought to be" (KS2). The teachers also mentioned teaching about five-a-day, dairy products and fish in other subjects stating that "it's a very low knowledge level in first grade. We covered five-a-day, dairy products and fish and vegetables during science class" (CT2).

Discussion

A school environment can influence children's relationships with food through *ethos*, policies, and practices (St. Leger, 2001). Locations where learning takes place might influence the learning processes and opportunities within the subject. Several of the students interviewed associated the school

subject FH with preparing food in the teaching kitchen, despite that only a few students in 4th grade had access to the teaching kitchen. The focus group interviews were conducted in 2021 during the COVID-19 pandemic, which may have impacted both the quality and frequency of teaching. The placement of instruction might also, to a certain degree, have been influenced by remaining restrictions. During the FGIs, students mentioned engaging in discussions about food and health in the classroom, going on field trips, or cooking outdoors, although not really relating this to the subject of FH. The teachers also talked about having few hours dedicated solely to FH, but that the subject was often incorporated into other subjects. Students in this study perceived the subject as having a strong emphasis on healthy versus unhealthy food, and both students and teachers experienced a gap between students' wishes about what kind of food they wanted to prepare, and the dietary guidelines.

The students talked about the subject FH as though it consisted of two separate parts: a cooking component and a health component. The food component of the subject involved cooking and preparing food, while the health component was more focused on physical factors that impact health, such as physical activity, tobacco use, smoking, and on lifestyle diseases. Overall, the "food" component was attached to practical work, while the "health" component was considered part of the subject theory. This indicates that the interconnection between these two parts must be made clearer in future FH education. The lack of interconnection may be caused by the low number of teachers with formal education in FH and few teaching hours (Arnesen et al., 2023). Teachers who lack formal education in FH tend to have teaching practices that do not strongly encourage knowledge-based learning, and they may not prioritize the potential health benefits of the subject (Bjørkkjær et al., 2023; Bottolfs, 2020). Many of the students in our study participated in discussions about healthy eating, without being able to describe in detail what this "healthy" food consisted of. In a study by Velardo and Drummond (2019), parents and teachers were identified as significant persons shaping children's engagement with nutrition information, with children specifically highlighting their trust in teachers as health "experts", given their many years of experience in school, also indicating the importance of educated teachers. These findings are congruent with findings presented by Beinert et al. (2021), who highlighted the connection between competent teachers and everyday food choices for young students. Notwithstanding unchanged food habits, 11-year-old children from 28 randomly selected schools formed more positive attitudes towards healthy eating habits after being taught about this at school (Kostanjevec et al., 2012). However, Beinert et al. (2022) reported few dietary changes among students in 6th to 10th grade, despite increased knowledge about food and health. This could be caused by a low number of teaching hours, as Egg et al. (2020) have documented a positive association between nutrition education hours per week and healthier food choices, for example a higher intake of whole grains and a lower intake of meat and energy drinks.

According to the School Subject Survey, 59% of the interviewed teachers in FH at the primary level agreed, or strongly agreed, that the subject's focus should primarily be on health and nutrition (Espeland et al., 2013). Despite the focus on health for FH courses, the most mentioned activity for grades 1-4 in our study was baking a crunchy cookie called gingerbread. In a study by Veka et al. (2018),

the recipes were dominant in the planning and implementation of the teaching, in line with this study. The raw material used was often ready-made, either bought ready or prepared by the teacher.

Students in our study mentioned using pre-made dough for making items such as saffron buns, gingerbread cookies, Serina cookies, waffles, and bread on a stick. Pre-made dough is both easy and timesaving, being ready to be rolled out or shaped by the students. If the students are involved in weighing, measuring, and mixing, their learning outcome may increase, and it might be easier for them to transfer their knowledge and skills to the home situation. Ready-made products are often less healthy than similar home-made recipes. The presence of such recipes in teaching is often said to be of cultural importance (Bohm, 2022).

The home environment constitutes an essential foundation for instruction in the subject of HE (Åbacka, 2008). When students experience that what is taught in school is practiced at home and in the community, this can shed light on the importance of what they learn. However, it is also important that the students bring their knowledge from school to home, as the choice of ingredients, approach and recipes at school may influence diet and cooking at home.

Fruit salad was the most frequently made healthy dish in the FH classroom, often chosen because of its simplicity and suitability to be prepared in the classroom. Students also brought sausages and hamburgers from home to grill over the fire during school hours. Insufficient attention given to financial factors may play a role, as suggested by Helland et al. (2021), in influencing the food choices that students make when bringing food from home. However, these types of activities provided minimal learning opportunities as students are not taught “how,” or “why” with respect to choosing ingredients and recipes and everyday choices, an aspect also problematized in previous research (Bohm et al., 2023; Velardo & Drummond, 2019). Educational approaches that fail to equip students with the skills to make reflective choices might affect their future diet, as we make more than 200 food-related decisions daily (Wansink & Sobal, 2007). Using pre-made products might hinder the learning process, as students miss out on crucial aspects such as becoming familiar with different ingredients, measuring, reading, following a recipe, and how to make food-related decisions.

In the subject FH, the requirements for both LK06 and LK20 have the explicit goal of contributing to reducing social inequalities in health (More, 2006, 2019). Students interacted within multiple settings to develop their nutrition-related understandings and skills and mentioned acquiring much of their knowledge about food and health from their homes or other family members. In a study by Velardo and Drummond (2019), children also identified mass media as a key provider of basic nutrition information. If the potential of FH is not fully utilized from the early grades, it may result in widening knowledge gaps throughout the course of instruction. This, in turn, may contribute to increasing socio-economic disparities during the school years and beyond. Aadland et al. (2023) emphasized that in teaching FH in grades 1-4, there is a strong emphasis on practical activities, with less focus on the knowledge foundation behind different choices. It is challenging to mitigate social inequalities in health solely through practical activities if students fail to understand the underlying

reasons for choosing ingredients and dishes in line with the dietary guidelines. To enhance children and adolescents' skills and attitudes to the extent expected by the curriculum in FH, it might be necessary to focus more on the scope and variety of teaching methods (Lindblom, 2016; Øvrebø, 2013; Taar & Palooki, 2022), providing learning assignments that are challenging and complex. The ability to synthesize knowledge from several school subjects is complex and requires clear and careful teacher guidance and appropriate learning tasks (Haapaniemi et al., 2023). Oogarah-Pratap et al. (2004) also stressed the importance of students' active participation for optimal learning outcomes, which implies that the students must use the teaching kitchen frequently.

Lack of teaching hours might be a reason for presenting ready-made dough to students, as well as the high percentage of teachers with little training in FH (Arnesen et al., 2023). Bohm (2022) states that cooking, with its high emphasis on preparing and eating complete meals, takes up most of the time in the subject, resulting in a downplaying of theoretical perspectives. This is a statement in line with our results. Despite the acknowledged importance of health education and its relevance to the students' lives in general, it is often difficult to find time for it in the school curriculum. Additionally, parents have difficulties finding time for mutual cooking at home in a busy everyday life (Campbell et al., 2007). The World Health Organization (2006) and the International Federation for Home Economics (Dewhurst & Pendergast, 2009) both advocate for a holistic approach that encompasses practical cooking, nutrition education, the cultivation of a healthy lifestyle, and learning activities to prepare students for life. To ensure that all children can prepare simple dishes in line with dietary guidelines upon completion of their schooling, it would be beneficial for schools to focus on teaching about healthy choices of raw materials and basic cooking techniques.

Øvrebø (2014) reported that nutrition education towards fruit and vegetables was not as efficient, or was even absent in the FH classes in 9th grade in Tromsø in Norway. As in this study, students came to school with knowledge, attitudes and patterns of behavior learned from families, friends, and the community in general. All these sources of information are important (Williams et al., 1990). Even though the students in our study at first stated that they had not heard about the term "dietary guidelines," they were able to share some information during the conversations, primarily about the keyhole symbol, the plate model, and which foods are healthier to consume. Sugar was referred to as something negative. Approximately half the groups knew of the dietary guideline of consuming five servings of fruits or vegetables per day and this was the dietary advice of which they were most familiar. By choosing ingredients in accordance with recommendations from the health authorities, the students should be able to prepare healthy meals throughout the day. If the potential of the subject FH is not fully utilized from the early grades, it may result in widening knowledge gaps throughout the course of instruction. This, in turn, can contribute to increasing socio-economic disparities during the school years and beyond. It would be challenging to mitigate social inequalities in health solely through practical activities if students fail to understand the reasons for choosing ingredients and dishes in line with dietary

guidelines. This was elegantly expressed in 1889 by McLellan & Dewey (1889) when they stated that one should, “Learn to do by knowing and to know by doing.”

Conclusion

Our findings indicate that the dishes the students recall making in their FH classes are prepared with ingredients the Norwegian Directorate of Health seeks to restrict through the Dietary Guidelines. Furthermore, the students experienced FH as consisting of two separate parts: a cooking component and a health component, which need to be better connected in future FH education to utilize the few teaching hours available in the subject more efficiently than is currently the case. Many of the students seemed to have learned how to prepare food with recipes, but teachers should focus more on the science behind cooking and provide students with the knowledge base needed to make better decisions regarding raw materials and recipes.

The teaching approach reported in this paper failed to promote socio-economic equality with students not being able to make everyday food choices in accordance with national guidelines and recommendations. Students need to reflect on why and how to make informed food choices and learn different things to make well-informed choices regarding diet and lifestyle. A rationale for the various choices should be included to a greater extent in future teaching in FH.

Limitations

In collaborative research, there is a possibility that the children deemed most suitable by the teacher are the ones approached and given the opportunity to participate in the interviews (Dockett et al., 2009). Knowledge is generated from children's own perspectives. The data in research involving children can be both fascinating and seductive but is always subject to an interpretive process (Nilsen, 2019). Memories stated by the students were a mixture of school activities, after school program, and activities at home. Furthermore, the interviews were conducted in 2021 during the COVID-19 pandemic, which may have impacted both the quality, localization, and frequency of teaching. Future research should further examine different aspects of teaching the subject FH in grades 1 to 4.

References

- Arnesen, H. S., Steffensen, K., Foss, E.S., Lervåg, M. L. & Keute, A. L. (2023). Lærerkompetanse i grunnskolen. Hovedresultater [Teacher competence in primary school. Main results] 2021/2022. Statistics Norway.
<https://www.ssb.no/utdanning/grunnskoler/artikler/laererkompetanse-i-grunnskolen.hovedresultater-2021-2022>
- Ask, A. S., Aarek, I., Helland, M. H., Sandvik, C. & Aadland, E. K. (2020). The challenge of teaching food and health in the first four years of primary school in Norway. *Journal of the International Society for Teacher Education*, 24(1), 60–70.
<https://hdl.handle.net/11250/2727026>
- Beinert, C., Palojoki, P., Åbacka, G., Hardy-Johnson, P., Engeset, D., Rudjord Hillesund, E., Selvik Ask, A. M., Øverby, N. C., & Nordgård Vik, F. (2020). The mismatch between teaching practices and curriculum goals in Norwegian Home Economics classes: a missed opportunity. *Education Inquiry*, 12(2), 183-201. <https://doi.org/10.1080/20004508.2020.1816677>
- Beinert, C., Sørli, A. C., Backa, G., Palojoki, P. I., & Vik, F. N. (2021). Does food and health education in school influence students' everyday life? *Health Education Journal*, 81(1), 29-39.
<https://doi.org/10.1177/00178969211045722>
- Bjørkkjær, T., Palojoki, P., & Beinert, C. (2023). Harnessing the untapped potential of food education in schools: Nurturing the school subject Food and Health. *Maternal & Child Nutrition*, e13521. <https://doi.org/10.1111/mcn.13521>
- Bohm, I. (2022). “We can never close the book and say, ‘We’ll continue next week’” – The rhythms of cooking and learning to cook in Swedish home economics. *Food, Culture & Society*, 25(3), 604-619. <https://doi.org/10.1080/15528014.2021.2002057>
- Bohm, I., Åbacka, G., Hörnell, A., & Bengs, C. (2023). “Can we add a little sugar?” the contradictory discourses around sweet foods in Swedish home economics. *Pedagogy, Culture & Society*, 1-17. <https://doi.org/10.1080/14681366.2023.2190754>
- Bottolfs, M. (2020). Mat og helsefaget i dagens skole [The Food and Health subject in today's school]. *Norsk pedagogisk tidsskrift*, 104(2), 181-193. <https://doi.org/10.18261/issn.1504-2987-2020-02-08>
- Campbell, K. J., Crawford, D. A., & Hesketh, K. D. (2007). Australian parents' views on their 5-6-year-old children's food choices. *Health Promotion International*, 22(1), 11-18.
<http://www.jstor.org.ezproxy.uis.no/stable/45152899>
- Dewhurst, Y., & Pendergast, D. (2009). Daring to lead: Global perceptions of the IFHE position statement: Home Economics in the 21st Century. *Journal of the Home Economics Institute of Australia*, 16(2), 21-32. <http://hdl.handle.net/10072/30422>
- Dockett, S., Einarsdottir, J., & Perry, B. (2009). Researching with children: Ethical tensions. *Journal of Early Childhood Research*, 7(3), 283-298. <https://doi.org/10.1177/1476718x09336971>

- Egg, S., Wakolbinger, M., Reisser, A., Schätzer, M., Wild, B., & Rust, P. (2020). Relationship between nutrition knowledge, education and other determinants of food intake and lifestyle habits among adolescents from urban and rural secondary schools in Tyrol, Western Austria. *Public Health Nutrition*, 23(17), 3136-3147. <https://doi.org/10.1017/s1368980020000488>
- Espeland, M., Arnesen, T. E., Grønsdal, I. A., Holthe, A., Sømoe, K., Wergedahl, H., & Aadland, H. (2013). Skolefagsundersøkelsen 2011: praktiske og estetiske fag på barnesteget i norsk grunnskule [The school subject survey 2011: practical and aesthetic subjects at the nursery stage in Norwegian primary schools] (Vol. 2013/7). Høgskolen Stord/Haugesund.
- Fauskanger, J., & Mosvold, R. (2014). Innholdsanalysens muligheter i utdanningsforskning [The possibilities of content analysis in educational research]. *Norsk pedagogisk tidsskrift*, 98(2), 127-139.
http://www.idunn.no/npt/2014/02/innholdsanalysens_muligheter_iutdanningsforskning
- Grande, G. M. (2019). *Mat og helse på ungdomstrinnet. Utfordringer og muligheter* [Food and health at secondary school. Challenges and opportunities] [Master, Nord University].
<http://hdl.handle.net/11250/2644601>
- Hansen, L. B., Myhre, J.B., Johansen, A.M.V, Paulsen, M.M., & Andersen, L.F. (2017). Kosthold blant 9- og 13-åringer i Norge [Diet among 13-year-olds in Norway]. Oslo: Folkehelseinstituttet. Retrieved from
https://www.fhi.no/globalassets/dokumenterfiler/rapporter/2017/ungkost-3-rapport-blant-9-og-13-aringer_endeligversjon-12-01-17.pdf
- Helland, M., Aadland, E. K., Ask, A. S., & Sandvik, C. (2021). Rammefaktorenes betydning for mat- og helseundervisningen på 1.- 4.trinn [The importance of the framework factors for food and health education in grades 1-4]. *Acta Didactica Norden*, 15(1), 1-21.
<https://doi.org/10.5617/adno.7994>
- Holthe, A. & Wergedahl, H. (2013). Kap.4 Mat og helse på barnetrinnet - praktisk, men ennå ikke kreativt [Chapter 4 Food and health at the children's level – practical, but not yet creative] (M. Espeland, T. E. Arnesen, I. A. Grønsdal, A. Holthe, K. Sømoe, H. Wergedahl, & H. Aadland, Eds.). Høgskolen Stord/Haugesund. <http://hdl.handle.net/11250/152148>
- Hsieh, H. F. & Shannon, S. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, 15, 1277-1288. <https://doi.org/10.1177/1049732305276687>
- Haapaniemi, J., Venäläinen, S., Malin, A., & Palojoki, P. (2023). Amplifying the voice of pupils: using the diamond ranking method to explore integrative and collaborative learning in home economics education in Finland. *Education Inquiry*, 14(1), 125-144.
<https://doi.org/10.1080/20004508.2021.1966888>
- Johannessen, A., Christoffersen, L., & Tufte, P.A. (2012). *Forskningsmetode for lærerutdanningene* [Research method for teacher education]. Abstrakt forlag.
- Kostanjevec, S., Jerman, J., & Koch, V. (2012). The influence of nutrition education on the food

- consumption and nutrition attitude of schoolchildren in Slovenia. Online Submission, *US-China Education Review A* 11 p953-964. <https://eric.ed.gov/?id=ED538831>
- Kvale, S., & Brinkmann, S. (2015). *Det kvalitative forskningsintervju* [The qualitative research interview] (3rd. ed.). Gyldendal akademisk.
- Lindblom, C. (2016). Skolämnet Hem- och konsumentkunskap på 2000-talet: förutsättningar för elevers möjlighet till måluppfyllelse [The school subject Home and Consumer Studies in the 2000s: Conditions for pupils' opportunity to reach the goals in the subject] [Doctoral thesis, Umeå universitet]. DiVA. Umeå. <http://urn.kb.se/resolve?urn=urn:nbn:se:umu:diva-120481>
- McLellan, J. A., & Dewey, J. (1889). *Applied psychology: an introduction to the principles and practice of education*. Educational Pub. Co.
<https://archive.org/details/appliedpsycholog00mclerich/page/n21/mode/2upo>
- Mikkilä, V., Räsänen, L., Raitakari, O. T., Pietinen, P., & Viikari, J. (2005). Consistent dietary patterns identified from childhood to adulthood: The cardiovascular risk in young Finns study. *British Journal of Nutrition*, 93(6), 923-931. <https://doi.org/10.1079/BJN20051418>
- Ministry of Education and Research. (2006). *Curriculum for Food and Health* (MHE1-01). Laid down as regulations (LK06).
<https://www.udir.no/kl06/MHE1-01?plang=http://data.udir.no/kl06/eng#>
- Ministry of Education and Research. (2019). *Curriculum for food and health* (MHE01-02). Laid down as regulations. Curriculum for subject renewal 2020 (LK20).
<https://www.udir.no/lk20/mhe0102?lang=eng>
- Ministry of Health and Care Services. (2017). *Norwegian National Action Plan for a healthier diet: An outline – healthy diet, meal enjoyment and good health for everyone!* Retrieved from https://www.regjeringen.no/contentassets/fab53cd681b247bfa8c03a3767c75e66/norwegian_national_action_plan_for_a_healthier_diet_an_outline.pdf
- Nilsen, R. (2019). Barneperspektiv – en ressurs i kritisk samfunnsvitenskap? [Children's perspective – a resource in critical social science?] *Nordisk tidsskrift for pedagogikk og kritikk*, 5, 77-95.
<https://doi.org/10.23865/ntpk.v5.1444>
- Oogarah-Pratap, B., Bholah, R., Cyparsade, M., & Mathoor, K. (2004). Influence of home economics on the nutrition knowledge and food skills of Mauritian school adolescents. *Nutrition & Food Science*, 34(6), 264-267. <https://doi.org/10.1108/00346650410568327>
- Prelip, M., Erausquin, J. T., Slusser, W., Vecchiarelli, S., Weightman, H., Lange, L., & Neumann, C. (2006). Role of classroom teachers in nutrition and physical education. *Californian Journal of Health Promotion*, 4(3), 116-127. <https://doi.org/10.32398/cjhp.v4i3.1963>
- St Leger, L. (2001). Schools, health literacy and public health: possibilities and challenges. *Health Promotion International*, 16(2), 197–205. <https://doi.org/10.1093/heapro/16.2.197>
- The Norwegian Directorate of Health. (2011). Kostråd for å fremme folkehelsen og forebygge kroniske sykdommer: metodologi og vitenskapelig kunnskapsbidrag. IS-1881. [Dietary advice

- to promote public health and prevent chronic diseases: methodology and contribution to scientific knowledge] Helsedirektoratet.
- The Norwegian Directorate of Health. (2015). The Keyhole – Healthy choices made easy [digital document]. Retrieved from <https://www.helsedirektoratet.no/brosjyrer/nokkelhullet-enkelt-a-velge-sunnere>
- The Norwegian Directorate of Health. (2022). Utviklingen i norsk kosthold. IS-3061 [The development of Norwegian diets] Helsedirektoratet.
- Taar, J., & Palojoki, P. (2022). Applying interthinking for learning 21st-century skills in home economics education. *Learning, Culture and Social Interaction*, 33(2), 1-11. <https://doi.org/https://doi.org/10.1016/j.lcsi.2022.100615>
- Veka, I., Wergedahl, H., & Holthe, A. (2018). Oppskriften - den skjulte læreplanen i mat og helse [The recipe - the hidden curriculum in food and health]. *Acta Didactica Norge*, 12(3), 21-21. <https://doi.org/10.5617/adno.4829>
- Velardo, S., & Drummond, M. (2019). Qualitative insight into primary school children's nutrition literacy. *Health Education* (Bradford, West Yorkshire, England), 119(2), 98-114. <https://doi.org/10.1108/HE-08-2018-0039>
- Wansink, B., & Sobal, J. (2007). Mindless eating: The 200 daily food decisions we overlook. *Environment and Behavior*, 39(1), 106-123. <https://doi.org/10.1177/0013916506295573>
- Williams, T., Moon, A., Williams, M. & World Health Organization. (1990). *Food, environment and health: a guide for primary school teachers*. World Health Organization. <https://apps.who.int/iris/handle/10665/37816>
- World Health Organization. (2006). *Food and nutrition policy for schools: A tool for the development of school nutrition programmes in the European region*. WHO. Retrieved from <https://apps.who.int/iris/handle/10665/107797>
- Øvrebø, E. M. (2013). Curriculum education and development in home economics. In R. White (red.) *Curriculum Development, Innovation and Reform* (p.39-54). Nova Science Pub Inc; UK ed. Edition
- Øvrebø, E. M. (2014). Knowledge and attitudes of adolescents regarding home economics in Tromsø, Norway. *International Journal of Consumer Studies*, 38(1), 2-11. <https://doi.org/10.1111/ijcs.12043>
- Øvrebø, E. (2019). Teachers' experience in the subject of food and health and the promotion of health in Norwegian lower secondary schools. *International Journal of Learning, Teaching and Educational Research*, 18(2), 131-149. <https://doi.org/10.26803/ijlter.18.2.10>
- Aadland, E. K., Helland, M. H., Ask, A. S., & Sandvik, C. (2023). Tilfeldigheter styrer undervisningspraksis i mat og helse på 1.-4. trinn [Ad hoc teaching practices in the Food and Health subject in grades 1-4]. *Acta Didactica Norden*, 17(1), 1-21. <https://doi.org/https://doi.org/10.5617/adno.9720>

Åbacka, G. (2008). Att lära för livet hemma och i skolan: elevers uppfattningar av kost och hälsa, konsumtion och privatekonomi samt hushåll och miljö [Learning for life at home and in school: Pupils' understanding of diet and health, consumption and private finances, as well as household and environment] [PhD thesis Åbo Akademi]

Authors

Merete H. Helland is an Associate Professor of food and health at the University of Stavanger. Research interests are primarily aimed at diet combined with children, young people, school and obesity.

Camilla Sandvik is an Associate Professor in nutrition, food and health at Nord University. Research interests include the school subject food and health, diet and physical activity among children and young people, and social inequalities in health.

Anne S. Ask is a Professor Emerita in food and health. Research interests are primarily linked to the school subject of food and health and educational entrepreneurship.

Eli Kristin Aadland is a Professor in food and health. Research interests are food and meals in school and the school subject food and health.