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Lesson signature in food and health education

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ABSTRACT

The Food and Health subject is a mandatory subject in primary and lower secondary schools in Norway and has many similarities to the internationally known subject Home Economics. This study aimed to examine how learning activities are structured in Food and Health education, both from the teacher's and the student's perspective. Momentary time sampling was used as the observation method, and we created "lesson signatures" of the Food and Health education based on the observational data. "Lesson signature" is a term used for an aggregate number of observed teaching sessions, and is intended to reveal specific external patterns, considering time use, organisation and teaching patterns. Data were collected from 23 observed Food and Health lessons from sixth and ninth grades in Norway. The signatures show that although the activity level of both teachers and students was high, teachers controlled and regulated the lessons. Teaching methods consisted mainly of group work. Students spent a small proportion of the lesson listening, and conversation and discussion as a collective were virtually absent.

ARTICLE HISTORY

KEYWORDS

Home economics; group work; oral skills; teaching and organisational forms

Introduction

Home economics is part of the school curriculums in many countries around the world. In Norway, home economics has been a mandatory school subject in compulsory education for both girls and boys since 1959. Home economics was replaced as a school subject by food and health (FH) in 2006. FH is a multidisciplinary subject that broadly covers food, nutrition and health.

In Norway there is a national core curriculum that includes values and principles for primary and secondary school (Norwegian Ministry of Education and Research, 2017). Each subject has its own curriculum and competence goals, and individual schools and teachers can choose specific content and working and assessment methods (Directorate for Education and Training, 2020). The curriculum has changed from being a content-oriented curriculum to being a competence- and goal-oriented curriculum (Dale, Engelsen, & Karseth, 2011). There are competence goals for FH after the fourth, seventh and tenth grades that indicate what students should be able to do after completing the training at that specific point. The subject is both practical and theoretical in nature and

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includes skills requirements (Directorate for Education and Training, 2020). Historically, the main focus has been on the practical work related to cooking in the teaching kitchen; also today there seems to be a strong focus on developing students' practical skills than on mastering the more theoretical elements in the curriculum (Beinert et al., 2021; Bottolfs, 2020; Veka, Wergedahl, & Holthe, 2018; Øvrebø, 2014). A new curriculum does not always change practice. Research also shows a wide gap between investment in the formal curriculum and actual practice in the classroom (Møller, Ottesen & Hertzberg, 2010).

In addition to the competence goals, the curriculum defines five basic skills: reading, writing, numeracy, oral skills and digital skills. These skills are part of the competence in the subjects and are necessary for learning and understanding them. Previous research indicates, however, that the curriculum's emphasis on basic skills is not reflected in teaching (Møller, Ottesen, & Hertzberg, 2010). Traditionally, the emphasis on oral has a central place in the subject FH and is therefore particularly interesting to focus on. Throughout the lesson, the students have encountered work with the subject through the teacher's presentation of teaching material, review of recipes and distribution of work assignments. The teacher has traditionally also had a role as supervisor when the students work practically (Wilhelmsen & Holthe, 2009). According to the core curriculum oral skills as a basic skill involve creating meaning through listening, speaking and conversation. They involve mastering different linguistic actions and coordinating verbal and other sub-skills. They also involve being able to listen to others and give feedback and being aware of the recipient when one speaks for oneself (Norwegian Ministry of Education and Research, 2017). Oral skills in FH include being able to convey professional wonder and reflection through stories and conversations, discussions and presentations. The development of oral skills in FH ranges from talking about cooking and meals to presenting and discussing increasingly complex health, food consumption and food safety-related topics. Students must gradually be able to use several subject-related words to justify their choices or when participating in academic discussions (Directorate for Education and Training, 2020).

Framework factors can be defined as external or internal conditions that regulate, inhibit or promote teaching in various ways (Imsen, 2016). Imsen (2016) divides framework factors into five categories: 1) pedagogical, 2) administrative, 3) resource, 4) organisational and 5) directly related to students and their cultural background. Pedagogical framework factors include curricula and school tasks as defined in laws and regulations. Curricula are a framework factor in teachers' teaching. The Norwegian national core curriculum is relatively extensive, and teachers must adhere to general rules and frameworks at both the national and local levels. In addition, as described by Imsen (2016), Holthe, Hallås, Styve, and Vindenes (2013) and Lindblom, Arreman, Bohm, and Hörnell (2016), teaching method, class size, student group types, time available and teaching materials are all important factors in student achievement. The administrative framework includes timetable, class size and assessment schemes, as well as how the school should be managed and structured. Several schools report not putting teaching in FH in the timetable for first to fourth grade students (Helland, Aadland, Ask, & Sandvik, 2021) because often there is only one kitchen in each school and older students are given priority over younger students (Ask, Aarek, Helland, Sandvik, & Aadland, 2020). In FH, we see that students are divided into smaller groups according

to the design for 14 to 16 students, and the family model is often used as a starting point for lesson organisation. The family model means that students are divided into groups of up to four (Øvrebø & Engset, 2020). The total number of teaching hours is part of the resource framework, which also includes finances and material resources, such as school buildings, furniture, equipment and pedagogical teaching materials. The FH subject in Norway is limited to a total of 114 teaching hours in grades 1 to 7 and 83 teaching hours in grades 8 to 10 (Directorate for Education and Training, 2020), constituting 2.5% of total teaching hours and making it the mandatory subject with the least teaching hours in Norway. The school-based framework is defined by school culture, school codes and invisibility rules. There has always been a strong basis for the practical work relating to cooking in the teaching kitchen (Beinert et al., 2021; Bottolfs, 2020; Øvrebø, 2014; Veka et al., 2018) using an instructive form of teaching. The main patterns of teaching indicate that teachers have worked a lot in front of the whole class with instructions and questions for the students (Veka et al., 2018).

“Lesson signature” is a term used for the total number of observed teaching hours; i.e. it provides a typical snapshot of teaching completed and is intended to reveal specific external patterns (Toppol, 2012). Lesson signature refers to what happens in the lesson, when it happens and, to a certain extent, how the various elements in the teaching are connected (Toppol, 2012). It looks at the external structure of teaching, considering only time use, organisation and teaching patterns. The knowledge contribution of this article is its analysis of observational studies of completed teaching. In other words, it applies to teaching what, how and why and to change and development in the field. The didactic triangle is used to illustrate three basic elements present in any form of teaching: the student, the teacher and the content (Lillejord, Drugli, Nordahl, & Manger, 2010).

The aim of this study is to examine how learning activity is structured in FH education, whether the teacher’s attention is focused on the whole class, groups of students or single students, or whether it is present at all, and how learning activities organised among the students: do they work collectively as a class, in groups or individually.

Method

The data is derived from the research project Quality in education (KIO) (Haug, 2012). In order to answer the overall research question about how the quality of teaching is understood, practiced and experienced in school, both a questionnaire, interview and observation were used as methods. For the present article, we used the data from classroom activity observations in the subject FH. The data in the KIO study was collected from twenty-six different primary schools in sixteen municipalities within three counties in Norway. For practical and financial reasons, a stratified sample was chosen. The goal was to obtain as much variation in the material as possible, while also having a selection that did not differ significantly from the existing variations in primary schools in Norway. The schools chosen within these municipalities varied according to the number of students (i.e. small, medium and large schools). The data material includes both primary-only schools (first-seventh grade), secondary-only schools (eighth-tenth grade) and combined primary and secondary schools (first-

tenth grade). At each school, students from the third, sixth and ninth grades were observed. In total 15 classes in each grade, making a total of 45 classes. The choice of grade was based on the old division into three age groups: primary (six-nine year-olds), intermediate (ten-twelve year-olds) and junior (thirteen-fifteen year-olds). All of the teaching and activity in each class was observed for an entire week. Classroom activity observation was carried out by Volda University College employees with different academic backgrounds. None of the observers had a background in FH. An observation sheet with fixed categories was used and was based on the main categories in the didactic triangle: what the teacher does, what the student does and what the content of the activity was (Halse & Haug, 2008). The momentary time sampling started one minute after the lesson began and every five minutes thereafter. Activity is registered at the moment of observation and was marked as an observation point in the observation sheet. What happens in the five minutes in between is not registered. The observation forms included three possible teaching methods that could be registered in the classroom: whole class teaching, group work and individual work. The criterion for whole-class teaching consisted of the class being organised as a whole and allowed to take part in the same teaching programme. For group work, students work together in groups of two or more with mutual dependency, while for individual work, students work separately. As regards what the class does, the options were: listening to teacher, listening to fellow student, moving, performing break activity, working on work schedule, working on joint work tasks and working on differentiated work tasks. As regards what the teacher does, the alternatives were: giving notice, motivating, presenting subject matter, checking student work, supervising individual or group, class discussion, participating in student activity and waiting for the class to calm down.

The classroom activity observation consisted of observations in all school subjects. Authors of this paper analysed the raw-data and found that 28 of the observed lessons contained FH teaching. A few of these lessons contained both FH and other subjects. These lessons were not included in the data set as they were not strictly FH. We also omitted two 45-minutes lessons and three lessons of 90–95 minutes' duration as they were considerably shorter than the other lessons and most likely did not involve practical work with cooking. This paper is based on findings from 23 observed teaching lessons and 703 observation points. The duration of the teaching lessons included in the results were on average 147.8 ± 15 minutes.

The KIO study followed the ethical guidelines of the Norwegian Centre for Research Data. To obtain access to classrooms and students, school principals were contacted by email and telephone with written and oral information about the aims of the study.

Data analysis

IBM SPSS Statistics 24 was used to analyse the FH data. The results are presented as a frequency with percentages using descriptive statistics. To make the findings more accessible and readable, the frequency data from SPSS was converted to percentages (%) using Excel (version 2107). The registrations in each observation category and at each observation time were then summarised in a common registration form and converted into percentages. This was further used to generate lesson signatures using line charts. A lesson signature (Topphol,

2012) is a collection of observations over several hours that is presented for the purpose of revealing the pattern of a teaching lesson from start to finish (Toppol, 2012).

Results

The KIO project's observations were made in the third, sixth and ninth grades. No third-grade FH lessons were observed; 52% of the observations were made in the sixth grade and the rest were made in ninth grade. There was an uneven distribution of teacher gender in the FH classroom, with 84% of the teaching being carried out by female teachers and only 16% carried out by male teachers.

As shown in Table 1, around 87% of the observation points were registered as subject-specific content, i.e. as FH. Routine situations, waiting, discipline and other activities occurred to a much smaller extent. The categories were not mutually exclusive, and discipline and other activities overlapped with subject-specific content.

Figure 1 shows the lesson signature for subject-specific content, routine situations and waiting. At the start of the lessons, waiting and routine situations were the dominant activities, but after 10 minutes there was a high level of subject-specific content (i.e. FH) was for around 80 minutes (90%-100%). In the last part of the FH lessons, subject-specific content decreased slightly along with an increase in routine situations and waiting.

It was possible to register three types of teaching in the observation form: whole class, group work and individual work. The criterion for whole-class teaching consisted of the class being organised as a whole and allowed to take part in the same teaching programme. For group work, this was students working together in groups of two or more with mutual dependency, while for individual work this consisted of students working separately. As shown in Table 2, most of the FH lesson consisted of group work. According to the lesson signature of the organisation of FH lessons (Figure 2), whole class teaching dominated for a maximum of 10 minutes at the start of lessons and

Table 1. Distribution of subject-specific and other content in FH lessons.

	n	%
Food and health ¹	611	87
Routine ²	40	6
Waiting ³	30	4
Discipline ⁴	11	2
Other ⁵	46	7

The results are shown as the number of observation points (n) and the percentage of the total number of observation points (n = 703). The categories are not mutually exclusive, and the categories "Discipline" and "Other" overlap with subject-specific content, putting the overall percentage above 100%.

¹FH subject-specific content was registered when the observers were able to identify the subject.

²Routine situations.

³Waiting for something to start.

⁴The teacher addressed the breaking of rules, introduced rules, or discussed how to behave.

⁵Activities and content that do not fit into the first four categories.

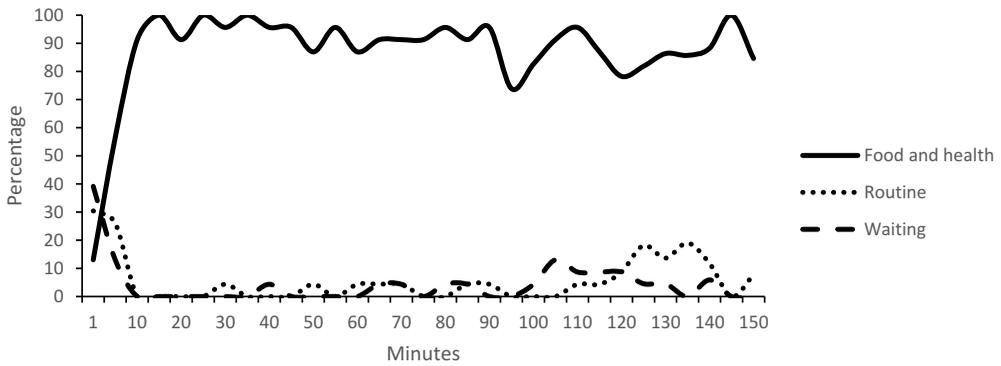


Figure 1. Lesson signature for the class organisation of FH lessons

The data is shown as a percentage activity every five minutes during the lessons and is based on 22 lessons of 120–160 minutes each and one lesson of 195 minutes.

Table 2. Organisation of the class.

	n	%
Whole class tuition	123	17
Group work	313	45
Individual work	159	23

The results are shown as the number of observation points (n) and the percentage of the total number of observation points (n = 703). The overall percentage observation points is below 100% due to no registration of class organisation as whole class tuition, group work or individual work, especially at the beginning or the end of the lesson (as seen in Figure 2).

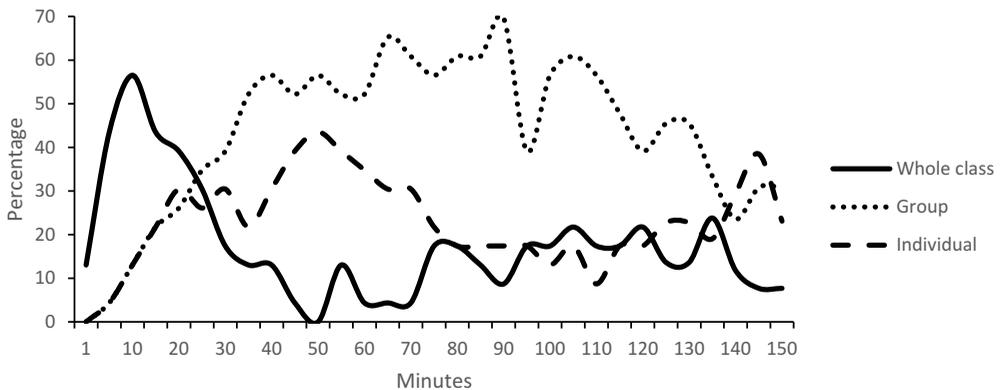


Figure 2. Lesson signature for organisation of the class during FH lessons

The data is shown as a percentage activity every five minutes during the lessons and is based on 22 lessons of 120–160 minutes each and one lesson of 195 minutes.

then diminished for the rest of the lesson. As whole class teaching declined, both individual work and especially group work increased. In contrast with whole class work, group work remained elevated throughout the lesson, while individual work

was at its most prominent when whole class work was at its lowest, at 45–70 minutes (Figure 2).

In FH lessons, *working with shared tasks* was the dominant activity in the class and almost 60% of the time was spent on shared tasks (Table 3), whereas 17% of the time was spent listening to the teacher and only 2% was spent listening to peers.

The results from the lesson signature of class activities (Figure 3) shows that the FH lesson started with students listening to the teacher (5–15 minutes), at which time the students did not move around the teaching kitchen. At 15–20 minutes, the dynamics of the FH lessons changed, with a rapid decline in listening to the teacher and shared tasks and movement increasing. Activity in the form of students listening to their peers was almost absent but when it did occur, this was mostly around the 25-minute point (Figure 3) along with the increased occurrence of shared tasks and movement.

The students were moving or in a state of unrest for a small part of the FH lessons, while pause activities were almost absent (Table 4).

As shown in Table 4, the teacher paid attention mostly to the class, but also to groups and individuals. The teacher was inactive or not present in the classroom for a small part of the lessons. The teacher spent around 5%–10% of the lesson on each of the following categories of activity: *giving notice*, *presenting subject matter/instructing*, *controlling student work*, *conversing with/listening to students* and *participating in student activities*. The teachers spent 35% of the time supervising individuals and/or groups (Table 4).

Figure 4 shows the lesson signature for teacher attention during FH lessons. At the start of the lessons, teachers were paying attention to the class, and at the 10-minute point teachers were paying attention to the class in 90% of the observations. After the 10-minute point, the amount of attention teachers were paying to the class declined rapidly and gave way to teachers paying attention to groups of students and individual students. At the end of the lessons, teachers seemed to be paying attention mostly to the class again.

In accordance with the attention teachers paid to the class at the beginning of the lessons (Figure 4), Figure 5 shows that teachers presented subject matter and instructed at the beginning of the lessons, peaking at the 10-minute point, then focused on supervising individual students or groups of students at the expense of whole class presentation. Teachers spent only 2% of the lesson waiting for the class to calm down (Table 4), and they did this mostly at the start of lessons (Figure 5).

Table 3. Activities in the class.

	n	%
Listening to the teacher	120	17
Listening to peers	12	2
Working with shared tasks	394	56
Working with differentiated tasks	93	13
Movement	115	16
Unrest	58	8
Pause activities	8	1

The results are shown as the number of observation points (n) and the percentage of the total number of observation points (n = 703). The categories are not mutually exclusive and may overlap, putting the percentage above 100%.

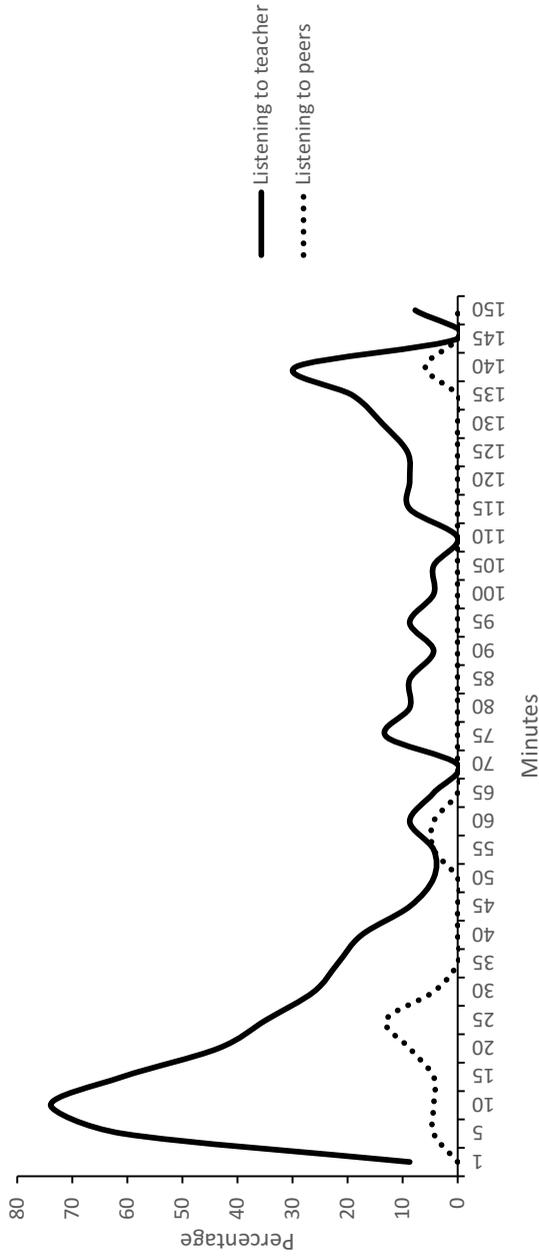


Figure 3. Lesson signature for class activities during FH lessons

The data is shown as a percentage activity every 5 minutes during lessons and is based on 22 lessons of 120–160 minutes each and one lesson of 195 minutes.

Table 4. Teacher activities during FH lessons.

	n	%
Paying attention to class	268	38
Paying attention to groups	164	23
Paying attention to individuals	160	23
Inactivity in respect of students	74	11
Not present	45	6
Giving notice	52	7
Presenting subject matter/instructing	77	11
Controlling student work	54	8
Conversing/listening	33	5
Supervising individuals/groups	249	35
Participating in student activities	53	8
Waiting for class to calm down	11	2

The results are shown as the number of observation points (n) and the percentage of the total number of observation points (n = 703). The categories are not mutually exclusive and may overlap, putting the overall percentage above 100%.

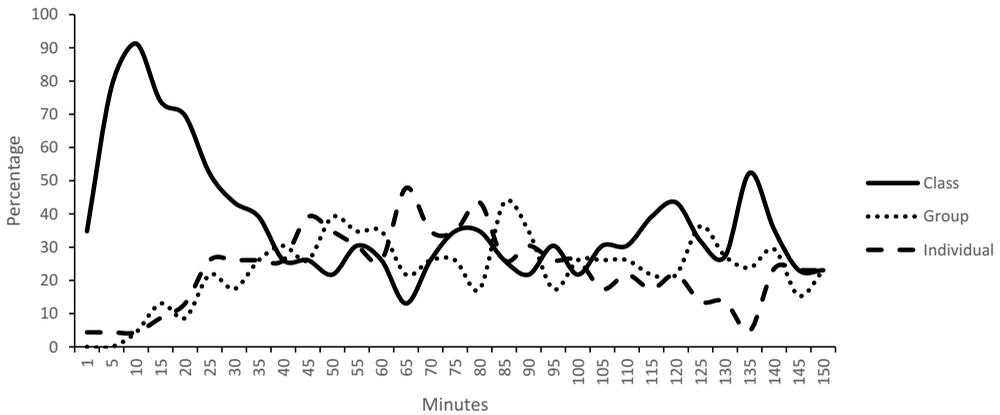


Figure 4. Lesson signature for teacher attention during FH lessons

The data is shown as a percentage activity every five minutes during the lessons and is based on 22 lessons of 120–160 minutes each and one lesson of 195 minutes.

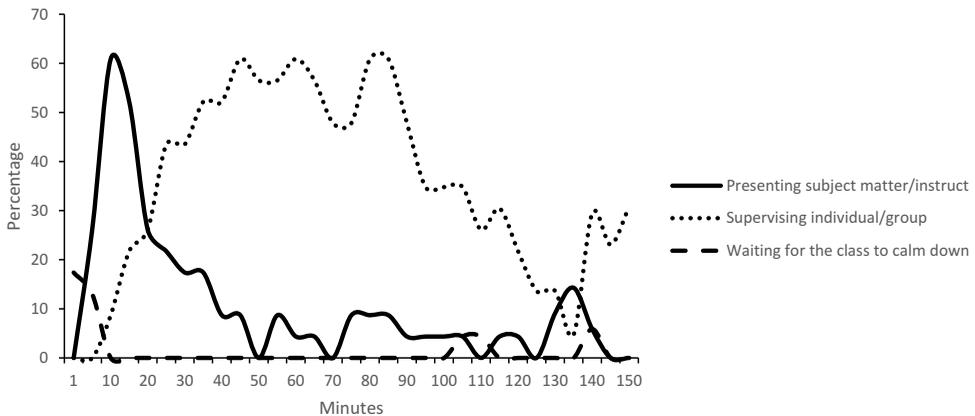


Figure 5. Lesson signature for teacher teaching method during FH lessons

The data is shown as a percentage activity every five minutes during the lessons and is based on 22 lessons of 120–160 minutes each and one lesson of 195 minutes.

Discussion

In Norway, FH is a compulsory subject with competence goals after the fourth, seventh and tenth grades. This means that the school owner must ensure that students receive training in grades 1 to 4, 5 to 7 and 8 to 10. The classroom observations in the KIO study were conducted in the third, sixth and ninth grades. We found that no FH teaching was observed in the third grade. This means that none of the 45 schools included in this study taught FH in the third grade. Statutory training in the subject is required in grades 1 to 4, with competence goals after grade 4. Since the schools themselves are free to choose which grade to add the teaching to (Møller et al., 2010), we do not know whether teaching was carried out in grades 1, 2 or 4 in the schools in our study. It could be advantageous to teach the subject in grade 4 rather than earlier due to the students' experience and maturity level (Helland et al., 2021). However, Helland et al. (2021) show that some schools have failed to put the subject on the timetable at all for grades 1 to 4 and justified their decision by concentrating the teaching hours in grade 6. Other studies also state that FH is taught mainly in grades 6 and 9 (Beinert et al., 2020; Bottolfs, 2020; Veka et al., 2018), which seems to be in line with our own results. FH is strongly gender-coded as a subject for female teachers (Pettersson, 2007). Our study likewise found that 86% of teachers were women and only 14% were men. This is in line with other findings (Beinert et al., 2020; Øvrebø, 2015). Our own observations concerned mixed-gender FH classes and thus do not capture the gender perspective when it comes to forms of organisation.

The organisation of the class during the FH lesson could be registered in the observation form as whole class teaching, group work or individual work. Individual work and whole-class teaching were observed to a small extent. Our results showed that group work was used most to teach the FH subject, in contrast with theory subjects like mathematics and language subjects like English and Norwegian, where group work was less often used to organise the class (Haug, 2012). To be defined as group work in this study, two or more students needed to be mutually dependent on each other to solve a task. In FH, it is common practice to go in groups into a kitchen unit in the FH classroom (Beinert et al., 2020). The size of the groups varies, but they are commonly comprised of two to four students. This way of organising class work in FH is often referred to as “work in family groups” or “work according to the family model”. The family method is used today on the basis of a socio-cultural understanding of learning in which students learn from and with each other through cooperation and communication (Øvrebø & Engeset, 2020).

Teachers were paying attention to the students as a group during 23% of our FH observation time. Compared to theoretical subjects, where teachers spend less than 10% of their time on students as a group (Haug, 2012), this figure is high. The lesson signature for the teaching methods in FH also confirms that group work was used a lot. In contrast with whole-class work, the level of group work remained high as the lesson progressed. Even though group work was the main activity, teachers spend more of the lesson time (38%) paying attention to students as a whole class. This figure is low compared to the corresponding figure for theory subjects such as English, where it is around 70%, or mathematics, where it is 48% of lesson time (Haug, 2012). The findings for physical education show that this subject has the most teacher-led whole-class

teaching, with attention paid to the whole class being dominant throughout the physical education lesson (Sæle, Wergedahl, Solberg, & Hallås, 2019). Our results for FH show that the teacher spends more time paying attention to the whole class than teaching the whole class. As previously mentioned, group work was most commonly used to teach FH, whereas in physical education whole-class teaching was most frequently observed, with some group work and work with individual students over the course of the lesson (Sæle et al., 2019). A natural interpretation of our observation in FH is that even if the teacher is paying attention to the whole class, students do not have to work as a whole class. From the lesson signatures, we can see that the observed lesson in this study is characterised by the teacher's presentation of subject matter and instruction of the whole class at the beginning of the lesson, followed by the teacher paying attention to groups of students and individual students. At the end of the lesson, the teacher again pays more attention to the students as a whole class. On this basis, we can claim that this teaching is mainly teacher-led and instructive, and that the teacher appears as an organiser and what we can call an initiator, one who starts the class. When Beinert et al. (2020) asked students to describe a typical FH lesson, they all provided very similar descriptions. The teachers first present the meal plan and describe or demonstrate how to make it. Then the students go in groups and prepare the dishes themselves, with the help of the teacher, if necessary, before they eat and clean up. The observations conducted in this KIO study do not reveal specific data the activities that were carried out, but we can assume that there were practical kitchen activities in groups based on how FH lessons are traditionally conducted. As stated in a number of studies, a practical lesson pattern in FH often begins or ends with an introduction or information being provided by the teacher, and with students listening before they begin to work on practical tasks in groups (e.g. Beinert et al., 2020, 2021; Veka et al., 2018).

Based on the length of the observations and the organisation of the lessons, we can also assume that the observed FH lessons consisted of practical work such as cooking. On average, approximately 80% of the FH teachers studied by Beinert et al. (2020) stated that they spent time in class on practical cooking. This is in line with other findings that state that FH lessons have consisted of practical work that includes cooking (Beinert et al., 2021; Øvrebø, 2014; Veka et al., 2018). The curriculum guidelines propose a total duration of 155 minutes per FH lesson, the initial 30 minutes of which are spent on the presentation of plans for the lesson and academic content (Norwegian Directorate for Education and Training, 2015). Øvrebø and Engeset (2020) agree and state that, optimally, in order to achieve the best possible practical teaching, a teaching lesson should last at least 135 minutes. Lesson durations under 120 minutes make it difficult for students to finish all the activities they are expected to perform during a lesson with sufficient quality (Lindblom, Arreman, & Hörnell, 2013). Our observations show that teaching lessons lasted an average of 135 minutes, with some being shorter and some longer. As mentioned, the curriculum guidelines propose 30 minutes initially being spent on the presentation of academic content, which is 19.4% of the total 155 minutes. When the teacher presents subject matter, the student listens. Our results show that 17% of the time was spent listening to the teacher, which is slightly less than the recommended time. The student listens mostly at the beginning and the end of the lesson, which is in line with the conduct of a traditional FH lecture. In the physical education observation, the class also spends a short time (20% of the

time) listening to the teacher (Sæle et al., 2019) and results are roughly similar to those of the FH observation. When comparing FH observation to that of theory subjects in the total KIO dataset, we see that the class listens for a reasonably long time: in Norwegian and mathematics, students listen to the teacher about 45% of the time, and in English lessons, they listen to the teacher almost 60% of the time (Haug, 2012). The time aspect is an important governing framework factor, as if a lesson is too short, it will be more difficult to achieve competence goals, especially in a practical subject such as FH. Insufficient time being available will lead to students being more concerned with the end product and finishing on time rather than with the actual learning process (Lindblom et al., 2016). The process itself must be more important than the end product (Trubek, Carabello, Morgan, & Lahne, 2017). If limited time is available, collaboration with other school subjects may be a way of broadening the opportunities for students to achieve competence goals (Lindblom et al., 2013). The national core curriculum (i.e. the values and principles for primary and secondary school) also states that the school and the subjects should take an interdisciplinary approach (Norwegian Ministry of Education and Research, 2017).

Previous research indicates that the curriculum's emphasis on basic skills is not reflected in teaching (Møller et al., 2010). Our results show that oral skills, one of the basic skills, are virtually absent: it is largely the teacher who spoke. The FH results show that the class spends only 2% of the time listening to peers. This may mean that in FH many students do not speak much or do not speak at all. We can say that conversation and discussion as a collective comprised only a small element of the FH lesson. This corresponds with the interviews of students by Hallås, Holthe, Vindenes, and Styve (2013), who found that conversation was received little emphasis in practical subjects such as FH. When Hallås et al. (2013) asked students about oral activities, the students replied that they had positive feedback when they were quiet and that being active and talking in class was often interpreted only as negative behaviour by the teacher. The fact that our observation found oral skills to be almost absent is worrying, especially as oral activity is emphasised in the curriculum for FH. In the curriculum the competence goals after fourth, seventh and tenth grades, respectively, the following verbs are used: a) after fourth grade: *wonder*, *present*, *conversation* and *explain*; b) after seventh grade: *tell*, *reflect* and *discuss*; and c) after tenth grade: *critically assess* (Directorate for Education and Training, 2020). None of these competence goals, or part of the competence goal can be achieved without oral skills. Students who are given the opportunity to explain, argue and reflect actively in learning processes will more easily become familiar with the subject language and thus develop competence around the contexts in the subject. A systematic emphasis on oral skills in all phases of the professional work can help to even out socio-economic differences in the food area by changing the code from everyday language to professional language. Throughout the FH lesson, this is how oral skills becomes an important part of the school's educational work. The results from our study show that there is potential to do more work on oral skills. However, the five basic skills were a relatively new concept when the data was being collected; at that time, the teachers had received little support in respect of how basic skills work should be incorporated into learning work (Svenkerud, Klette, & Hertzberg, 2012).

Teachers are often advised through policy statements and curriculum that they should have their students work in small groups. In the literature, there are two main approaches to learning in groups, namely cooperative group work and collaborative group work (Hammar Chiriac & Forslund Frykedal, 2011). Cooperative group work means working individually on a joint product but with little or no interaction, whereas in collaborative group work all members are involved in the same task and the competencies of all group members are used. Our results show that collaborate group work was used more often. Further on, observation revealed that students listened to each other for only a minimum of time, and that the little conversation that was observed occurring at the beginning and the end of the lesson. The little to no interaction between students during group work may indicate that cooperative group work was more common in our study. There is potential for working in an integrated way in FH. Academic student talk is e.g. an important factor in learning, especially where discussion, reasoning and making choices are concerned. Critical thinking is considered to be one of the most important competencies that children will need in the future. The fact that children actually use what they learn to make informed and reflected choices is an important purpose for the school and one that is clearly stated in the core curriculum's values and principles for primary and secondary education: "the school should help students to be inquisitive and ask questions, develop scientific and critical thinking and act with ethical awareness" (Norwegian Ministry of Education and Research, 2017, p. 7).

The start of the lesson in this study was characterised by presentation of subject matter and instructions. Based on this, we can claim that the teaching is mainly teacher-directed and instructive, and that the teacher appears as an organiser and the one who starts the lesson. A teacher-led form of teaching seems to be consistent with previous studies (e.g. Beinert et al., 2020, 2021; Veka et al., 2018). The observations showed a traditionally instructive teaching, while the students watch and listen before working with practical tasks. The fact that the subject is practiced as an activity more than a learning may also be due to lack of subject competence among the teachers (Perlic, 2019). More teachers in the subject therefore need to adopt new and more student-oriented learning strategies. There are few studies that in a quantitative, systematic way have looked more closely at the external structures of the FH subject, about how the lessons are organised. Therefore, more research should be conducted in the field, especially studies that also use qualitative methods, such as mixed methods research. A multi-method approach to the field will give us knowledge about the content of the FH lessons as well as the teachers and students experience of the FH education.

Strength and limitations

A strength of the study was that the same observers carried out all the observations throughout the days for a week. Another strength was that the observation form had fixed categories. Such method requires that if more than one person is to be an observer, the observers must be trained to maintain that the procedures are consistent and periodic testing of the observers' records will be necessary to ensure good reliability (Creswell, 2012, p. 154). In order to achieve the most common

understanding of the observation form, the observer team conducted a pilot testing. The agreement between the observers was satisfactory (Haug, 2012). A limitation of fixed categories in the observation form is that not so many details are registered from the activity that took place. This may have led to a form of measurement error since not all actual registrations were included (Haug, 2012). Another limitation in the data collection was that none of the observers had an education in the subject FH, and the observer may have been more uncertain about the registration in the subject FH than in other subjects. But on the other hand, an observer who has no relation to the subject can be more neutral and restrained and thus observe more objectively.

Conclusion

Although the activity level of both teachers and students was high, teachers controlled and regulated the lessons. Students' role was to perform practical kitchen tasks, mainly in the form of group work and less so through individual work and whole-class teaching. The duration of teaching hours was on average shorter than recommended in the guidelines. Students spent a small proportion of the lesson listening, and conversation and discussion as a collective were virtually absent.

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Disclosure statement

No potential conflict of interest is reported by the authors.

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