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Viewpoint Papers

Volume 18 Issue 2 2025 Editorial

Call for Papers: You Are What You Eat: Feeding the Future

International Journal of Home Economics Special Issue

First Draft Papers Due	February 28, 2026
Publication Date	November 2026

The World Home Economics Day's 2026 theme is "**You Are What You Eat: Feeding the Future.**" This theme highlights how dietary choices impact long-term health and societal wellbeing across all demographics and regions. The theme connects nutritional decisions to physical, cognitive, and social development—from supporting infant growth to maintaining elderly independence. Deciding what to eat is also linked to the availability of food and sustainable food systems. Feeding the future relies on contemporary individual and family wellbeing as well as thinking about ways of eating so that future generations also have sufficient for their needs.

This call for papers is an invitation to researchers, scholars and authors in the field of home economics to submit their **original research** to publish in this international journal. All submitted papers will be peer reviewed and published in an online format.

Advice for authors, including forms to be completing and submitted with the paper for consideration, can be found at: https://www.ifhe.org/ejournal/author-information.

Guest Editor for this Special Issue is Professor Kerry Renwick, Department of Curriculum and Pedagogy, University of British Columbia.

For all enquiries regarding this Special Issue please contact the Guest Editor on the following email address: kerry.renwick@ubc.ca with a copy to intjournalhomeeconomics@gmail.com

Final papers are to be submitted to the IJHE email address, clearly stating they are for consideration for the ***Special Issue World Home Economics Day's 2026*** at: intjournalhomeeconomics@gmail.com

Papers received by the due date will enter a double-blind peer review process.

Due date: February 28, 2026

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PEER-REVIEWED PAPER

Determinants of Undergraduates (Consumer) Intentions and Consumption of Plant-Based Food Alternatives in Fast-Food Restaurants in Some Selected Universities in Delta State

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Abstract

This study was conducted to investigate drivers of consumption intention and consumption of plant-based main course meal replacements in fast-food restaurants in Delta State, Nigeria. Against the background of growing international interest in sustainable diets, there is the need to understand local characteristics that help and hinder the adoption of plant-based foods in developing countries as a way of encouraging healthy and sustainable eating behaviour. It adopts the TPB to examine how health consciousness, environmental awareness, social influence, and perceived barriers in the form of taste, price, and cultural preference relate to consumer behaviour. Data collection was done through a cross-sectional survey carried out on 401 participants from Delta State using standardized questionnaires for quantitative information. Then, data were analysed using descriptive statistics, correlation analysis, and multiple regression methods. The results indicated that health consciousness, social influence, and environmental awareness were the significant determinants of the intention of consumers toward plant-based diets, with health consciousness being the most influential. Perceived obstacles, which refer to apprehensions on flavour, high costs, and cultural inclinations toward traditional meat-containing meals, affect consumption intentions negatively. The results highlight the necessity of breaking cultural and economic barriers and offering health and environmental benefits in order for plant-based diets to be adopted in Nigeria. It concludes with practical recommendations for fast-food companies on how to incorporate local flavours, affordability, and social marketing in order to facilitate consumer acceptance.

KEYWORDS: **UNDERGRADUATES, CONSUMER INTENTIONS, CONSUMPTION OF PLANT-BASED FOOD ALTERNATIVES, FAST-FOOD RESTAURANTS**

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Introduction

Considering plant-based food globally is crucial due to its potential to address several interconnected issues: environmental sustainability, global food security, and public health. Shifting towards plant-based diets can reduce greenhouse gas emissions, land use, and water consumption, while also mitigating the risk of diet-related chronic diseases.

Animal agriculture is a significant contributor to greenhouse gas emissions. Plant-based diets can drastically reduce these emissions, potentially by up to 70%. Raising livestock requires vast amounts of land for grazing and feed production. Plant-based diets, especially those emphasizing locally sourced foods, can significantly reduce land usage, potentially by up to 75%, freeing up land for other uses, including reforestation. Plant-based diets generally require less water than animal-based diets. Plant-based diets can be more efficient in utilizing resources, potentially allowing us to feed a larger global population. By decreasing the demand for animal products, plant-based diets can help alleviate pressure on land, water, and other resources, making them more available for other uses and potentially reducing conflicts over resources. Reduced Risk of Chronic Diseases: Studies show that plant-based diets can lower the risk of heart disease, type 2 diabetes, certain cancers, and obesity. Plant-based diets are often higher in fiber, which is beneficial for gut health and overall well-being. Prioritizing plant-based foods globally is not just a trend but a necessity to ensure a sustainable future for both the planet and its inhabitants. By embracing plant-based options, we can address critical challenges related to the environment, food security, and public health, contributing to a more sustainable and equitable world.

Plant-based diets consist of a variety of plant foods including whole grains, legumes, fruits, vegetables, nuts, seeds, and oils (Center for Nutrition Studies, 2019). This diet has become increasing prevalent in recent years, as there was a growth of 9.6 million Americans who adopted a plant-based diet from 2004 to 2019 (Kirkwood, 2020). Although evidence shows that plant-based diets can have beneficial health outcomes, there are misconceptions regarding plant-based nutrition that may impact dietary choices.

While certain dietary choices can have negative effects on health, other choices can positively affect longevity. For example, an increase in fiber consumption can help reduce cholesterol levels. Fiber is a nutrient that is only found, and abundant in, plant-based diets and has many beneficial properties. Functions of fiber include aiding in digestion, reducing blood cholesterol levels, and containing protective properties against cardiovascular disease, diabetes, metabolic syndrome, certain cancers, and obesity (William & Shiel, 2018). Seeing that most American follow the standard American diet and do not consume the recommended servings of fruits, vegetables, legumes, and whole grains, only about 5% of the United States population meets the recommendations for dietary fiber (Quagliani & Felt-Gunderson, 2016). Awareness of dietary choices can help to promote long-term health benefits or disease progression. College students are in a transitional phase where opinions and personality traits are formed (Bleidorn & Schwaba, 2017). Most college students eat less than 5 servings of fruits and vegetables per day, while over half reported consuming fast food and fried foods at least 3 times per week (Racette et al., 2005). Providing college students with correct information regarding plant-based nutrition may help them to include more plants into their diets and create healthy 43 dietary habits. To effectively communicate this information to college students, it is important to understand their present knowledge and attitudes regarding plant-based diets.

Fast foods and restaurants depict a huge and rapid expansion into today's world, spread across every location. It thrives in the affordability of meals at a faster and quicker pace, hence preferred by people for breakfast, lunch, and dinner. Whereas modern life intensifies, so does the demand for meal options that save time, which has been associated with increasing consumption of fast food during working hours. As eating behaviour changes, so does the restaurant business take a new turn in Nigeria? In fact, homemade meals had long been popular until there is evident consideration of eating out-of-home due to altered preferences and lifestyle trends. The fast food is gaining popularity especially in cities like Port Harcourt because of the diverse culture and variety of meal options available. For this reason, fast-food restaurants are highly patronized daily.

For them not to lose such customers or make them discontented with their services, they need to do more in satisfying the nonphysical aspects of food consumption. The attention should go to the emotional meeting of needs and value delivery as well because a lack in either of these dimensions may result in customer loss. Many fast-food chains traditionally remained unaware of these aspects and focused mainly on product delivery only. The main drivers for consumer choices in dining out on fast foods relate to the taste of food, competitive pricing, service speediness, cleanliness, convenience of location, safety of premises, and friendliness of staff, hours of opening/operational times, and availability of a variety of healthy menu options. Such factors can be summarized as the dimension of service quality, ambience of the restaurant, perceived value, and food quality, which altogether combine in a meal experience to affect consumer choice.

This demand in fast-food restaurants worldwide is based on health, environmental, and animal-friendly grounds; it is also a common scenario in Nigeria as a whole today and Delta State in particular, where the demand for plant-based diets is on the increase due to the rise in awareness of benefits derived from it amidst a change in dietary preference. Thus, the analysis of factors affecting consumption intentions and consumptions in this context offers substantial insight to fast-food enterprises that are eager to catch up with the emergent demand for sustainable options. A few recent studies have established the main drivers of consumption intention to choose plant-based foods, including health consciousness, ecological awareness, social influence, and perceived taste and quality of plant-based options. Thus, health issues remain one of the biggest drivers, and many consumers' associate plant-based diets with the prevention of chronic diseases such as heart diseases, diabetes, and obesity. A study by Taufique et al. (2022) showed that customers with a health-enhancing perception of plant-based diets tend to show higher acceptance and choice whenever they are made available in restaurants. There is great mental awareness, and consumers are growingly concerned with the environmental impact caused by meat production, mainly in relation to greenhouse gas emissions and deforestation. Bryant et al. (2019) established that sustainability motivates consumer decisions to adopt plant-based alternatives, especially for younger and more ecologically concerned demographics. Social influences in the form of recommendations by peers and social media also greatly influence consumer behaviour.

This is a very important factor in countries where the culture of plant-based diets is not prevalent. Taste perception is one of the major obstacles to plant-based foods acceptance in fast food setting. This implies that health-oriented consumers also tend to avoid plant-based alternatives if they feel that these options are not as tasty or as good as conventional meat-based dishes. Marketing strategies, such as tastings and quality assurances, that make plant-

based foods more acceptable will help overcome this barrier and increase consumption. In Nigeria, the attitudes of consumers toward food are significantly affected by economic problems and local food habits (Adewale & Taiwo, 2022). Regional studies also illustrate that price sensitivity and availability are significant factors affecting plant-based alternative consumption.

Affordability may remain a key factor for lower-income consumers, which, if the price of plant-based options remains higher than traditional fast food, may impede widespread mainstream adoption. Moreover, the future research study in Delta State should be based on frameworks such as the Theory of Planned Behaviour while integrating localized factors such as cultural dietary habits, economic constraints, and traditional fast-food restaurants regarding their impact on food choices.

Several factors influence consumer intentions and the actual consumption of plant-based food alternatives at fast-food restaurants in Nigeria. Factors involve health consciousness, environmental concern, perceived taste and quality, social influence, and convenience. According to studies, with increased health-conscious and environmentally-conscious attitudes, there will be an increased preference for plant-based diets. Traditionally, diets in Nigeria have been plant-based, and modern alternatives of the same are being increasingly accepted. Food choices will be influenced by cultural preference for meat, cost considerations, and lack of alternatives. Studies have indicated that the health benefits-associated reduced risks of chronic diseases with plant-based diets-are driving consumers to these options.

Social influence is also highly influential, as family and friends, along with social media trends, can encourage or discourage plant-based consumption. Fast-food restaurants offering convenient, palatable, affordable plant-based options would, therefore, have a better likelihood of attracting those who would normally consume typical meat-based meals (Adeyemi, 2020; Ajayi et al., 2021). Ajayi et al. (2021) and Adeyemi (2020) provided the understanding of behavioural and market factors influencing plant-based food consumption in the Nigerian fast-food context. Put differently, health awareness, environmental concerns, social factors, perceived quality, and economic considerations drive the consumption intention and actual consumption of plant-based food alternatives from fast-food restaurants in Nigeria. The major determinant of consumer behaviour is consciousness about health, as more people now adopt those diets which reduce the risk of contracting chronic diseases such as cardiovascular diseases, obesity, and diabetes.

Secondly, the production of traditional meat leads to environmental degradation through emission of greenhouse gases and deforestation; these are factors that make consumers willing to try plant-based options. Traditionally, a few plant-based ingredients have already been used in traditional dietary patterns in Nigeria, which tends to influence the development of the adoption of plant-based alternatives. There are a number of challenges associated with transitioning towards contemporary plant-based substitutes that include plant-based burgers to meat analogues within fast-food settings. Of particular note, some include cultural preference for meat, scepticism over taste and nutritional adequacy, high prices of plant-based options, and limited availability within fast-food menu offerings.

Social influences—family, peers, and social media trends—are prominent factors in the formation of consumer attitude about plant-based diets. For fast-food restaurants, convenience and taste are the primary determinants of consumer acceptance since consumers await meals to be served promptly with flavour that will satiate them.

Objectives and Research Questions

The study aims to identify the determinants influencing consumer intentions and the consumption of plant-based food alternatives in fast-food restaurants among undergraduate students in some selected universities in Delta State.

Research Objectives

I. The study aims to explore the determinants influencing consumer intentions and the actual consumption of plant-based food alternatives in fast-food restaurants in Delta State, Nigeria. The specific objectives are:

II. To identify the key factors that shape undergraduates' intentions to choose plant-based food alternatives in fast-food restaurants.

III. To examine the relationship between health consciousness and undergraduates' intentions toward plant-based food consumption.

IV. To assess the role of environmental awareness in influencing undergraduates' behaviour towards plant-based food alternatives.

V. To evaluate the impact of social influences such as peer recommendations and social media, on undergraduates' decisions.

VI. To investigate the perceived barriers to adopting plant-based foods, including taste, quality, and price considerations.

Research Questions

1. What are the primary factors that influence undergraduates' intentions to select plant-based food alternatives in fast-food restaurants in Delta State, Nigeria?
2. How does health consciousness affect undergraduates' intentions to consume plant-based foods in this context?
3. In what ways does environmental awareness influence the decision to choose plant-based food alternatives?
4. What role do social influences, such as peer recommendations and social media, play in shaping undergraduates' behavior towards plant-based food options?
5. What are the perceived barriers to adopting plant-based foods, such as concerns about taste, quality, and price?

Methodology

Design

This study adopted a descriptive survey design of ex post facto type to examine the determinants of consumer intentions and consumption of plant-based food alternatives in fast-food restaurants in Delta State, Nigeria.

Population and Sampling

The study will target consumers who are undergraduate students of public universities in Delta State who visit fast-food restaurants in Delta State.

The study employed a stratified random sampling technique to ensure a representative sample from the public universities in Delta State, Nigeria. The process involved the following steps:

Six public universities were identified for the study: Delta State University (Abraka), Delta State University of Science and Technology (Ozoro), Dennis Osadebay University (Asaba), University of Delta (Agbor), Federal University of Petroleum Resources (Effurun), and the National Open University of Nigeria (NOUN) campuses (Asaba, Emevor, and Owhrode).

These universities were selected because they represent various types of higher education institutions in Delta State, including conventional, specialized, and distance-learning institutions. The stratified sampling method provided a balanced representation of students from various academic disciplines, ensuring that the study captured a diverse range of perspectives on plant-based food consumption in fast-food restaurants.

Each university was stratified based on its existing faculties or colleges. The number of faculties/colleges sampled in each institution varied according to the available academic units. This stratification ensured that the study covered diverse academic disciplines and student populations within the institutions.

A quota sampling method was applied to determine the number of respondents from each faculty/college. From five of the public universities in Delta State, 13 respondents were selected from each faculty/college to account for their larger number of academic units, while 12 respondents were selected from each college in Federal University of Petroleum Resources Effurun. The sample sizes were chosen to maintain consistency across faculties while accommodating variations in faculty numbers among universities. In total, 200 respondents were targeted across all selected faculties and universities.

Within each faculty/college, participants were randomly selected to ensure that every student had an equal chance of being included in the study. This randomization helped to reduce bias and enhance the generalizability of the findings to the larger student population.

For the quantitative survey, a sample size of approximately 401 respondents was targeted to ensure statistical power as shown in Table 1.

Table 1 Universities, Faculties and sample size of the population

Public Universities in Delta State	Faculties/Colleges	Sample
Delta State University, Abraka	Agriculture Education Arts Science Social Sciences	13 from each faculty (Total = 65)
Delta State University of Science and Technology, Ozoro	Agriculture Science Earth Science Management Technology Engineering Environmental Sciences	13 from each faculty (Total = 65)
Dennis Osadeby University	Agriculture Arts Computing Environmental Sciences Management and Social Sciences	13 from each faculty (Total = 65)
University of Delta, Agbor	Agriculture Arts Education Information Technology Medicine Law	13 from each faculty/college (Total = 78)
Federal University of Petroleum Resources, Effurun	Science Technology	12 from each college (Total = 24)
National Open University of Nigeria (Asaba, Emevor and Owhrode campuses)	Agricultural Sciences Law Arts Management Sciences Education Science Health Science Social Science	13 from each faculty (Total = 104)
	Total Number of Respondents	401

Instruments Used

This study employs structured questionnaires aimed at assessing the following key areas: Section A included demographic information. To gather demographic information, including age, gender, income level, and educational background.

Section B comprised a self-developed instrument focused on Health Consciousness. It included questions designed to evaluate respondents' awareness and attitudes regarding health and healthy eating, such as: “How important is it for you to consume foods that are considered healthy?” and “Do you consider plant-based foods as a healthier alternative to traditional meat-based diets?”

Section C focused on Environmental Awareness, assessing respondents' comprehension of the environmental implications of food choices. Example items included: “How concerned are you about the environmental impact of meat consumption?” and “Do you believe that plant-based diets can mitigate environmental issues such as climate change?”

Section D addresses Social Influence: Questions designed to assess the impact of social factors on consumer behaviour, including inquiries such as: “How frequently do friends or family motivate you to explore plant-based foods?” and “Do you experience pressure from social media or public opinion to embrace a plant-based diet?”

Section E addresses Perceived Barriers, with questions focusing on obstacles to adopting plant-based diets, such as: “Do you find plant-based foods less tasty compared to meat-based options?”, “Do you consider plant-based foods to be more expensive than traditional meals?”, and “How strong is your preference for traditional meat-based dishes over plant-based options?”

Section F pertains to Behavioural Intentions. Factors to evaluate the probability of future consumption of plant-based foods include: “What is the likelihood of ordering plant-based food at a fast-food establishment within the next month?” and “Would you contemplate decreasing your meat intake in favour of plant-based alternatives?”

The questionnaires employed consist of both Likert-scale items (ranging from “strongly agree” to “strongly disagree”) and multiple-choice questions. A pilot test of the questionnaire was conducted with 30 participants to assess clarity, reliability, and validity. Adjustments were made in response to the feedback.

Data Analysis

Data from the survey were analyzed using statistical software such as SPSS. Descriptive statistics (mean, standard deviation) were used to summarize the data, and inferential statistics (regression analysis, correlation) assessed relationships between variables. Informed consent was obtained from all participants, and they were assured of their anonymity and confidentiality.

Ethical Considerations

Informed Consent: Participants were informed about the study’s purpose, procedures, and their right to withdraw at any time. Their consent was obtained before participation and document signed.

Confidentiality: All participant responses were kept confidential and anonymized in during the study, this was undertaken as their identity was not revealed during the study.

Respect for Participants: Sensitivity to cultural beliefs and practices around food and preservation was maintained throughout the study, this was undertaken as factors such as health consciousness, environmental awareness, and social influence, cultural beliefs and practices of the participants were taken into cognizance.

Results

Together, these tables provide a comprehensive overview of the study's findings, highlighting the demographic characteristics of the sample, key determinants and barriers to plant-based food consumption, and consumer perceptions on factors influencing consumer behaviour toward plant-based food alternatives in fast-food restaurants in Delta State, Nigeria.

Table 2 presents the demographic profile of the study participants. It shows the distribution of the sample across various demographic variables such as age, gender, education level, and monthly income. The largest age group is 18–25 years (37.5%), reflecting a young demographic likely to be interested in fast-food consumption. The gender distribution is fairly balanced, with a slight female majority (55%). Education levels indicate a relatively well-educated sample, with most participants having at least an undergraduate degree. The income distribution shows that a significant portion of respondents fall into lower-income brackets, which could influence their food choices, particularly regarding price sensitivity.

Table 2 Demographic Characteristics of Respondents

Demographic Variable	Frequency (*n*=400)	Percentage (%)
Age Group		
18-25	150	37.5
26-35	121	30.0
36-45	80	20.0
46 and above	50	12.5
Gender		
Male	180	45.0
Female	221	55.0
Income Level (Monthly)		
Below ₦50,000	141	35.0
₦50,000-₦100,000	160	40.0
Above ₦100,000	100	25.0

Table 3 provides the correlation coefficients between the key determinants and consumer intentions to consume plant-based food alternatives. Significant positive correlations are found between consumer intentions and factors such as health consciousness (0.65), environmental awareness (0.48), and social influence (0.53), indicating that these factors positively affect intentions to adopt plant-based diets. Conversely, perceived taste (-0.60) and price sensitivity (-0.55) show strong negative correlations with consumer intentions, suggesting that concerns about taste and cost can hinder the adoption of plant-based options.

Table 3 Correlation Analysis of Determinants Influencing Consumer Intentions

Variable	Health Consciousness	Environmental Awareness	Social Influence	Perceived Taste	Price Sensitivity
Consumer Intentions	0.65**	0.48**	0.53**	-0.60**	-0.55**

Note **p < 0.05, indicating significant correlations

Table 4 displays the results of the multiple regression analysis used to identify which factors most significantly predict consumer intentions toward plant-based food alternatives. Health consciousness (β = 0.50) emerges as the strongest predictor, followed by social influence (β = 0.35) and environmental awareness (β = 0.30), all of which are statistically significant ($p < 0.001$). Negative beta coefficients for perceived taste (β = -0.45) and price sensitivity (β = -0.40) confirm that these factors are barriers to the adoption of plant-based foods.

Table 4 Multiple Regression Analysis Results

Predictor Variable	Beta Coefficient (β)	Standard Error (SE)	t-value	p-value
Health Consciousness	0.50	0.07	7.14	<0.001
Environmental Awareness	0.30	0.06	5.00	<0.001
Social Influence	0.35	0.08	4.38	<0.001
Perceived Taste	-0.45	0.05	-9.00	<0.001
Price Sensitivity	-0.40	0.06	-6.67	<0.001

Table 5 lists the main barriers that consumers perceive when considering plant-based food alternatives. Taste concerns are the most frequently cited barrier (70%), followed closely by price concerns (65%). Cultural preferences for traditional meat-based diets (55%) and limited availability of plant-based options (45%) also pose significant challenges. These findings suggest that despite some interest in plant-based alternatives, practical barriers may still prevent widespread adoption.

Table 5 Perceived Barriers to Adopting Plant-Based Foods

Barrier	Frequency (*n*=401)	Percentage (%)
Taste Concerns	280	70.0
Price Higher Than Regular Options	260	65.0
Cultural Preferences for Meat	220	55.0
Limited Availability	180	45.0
Lack of Awareness	140	35.0

Discussion

These are indeed the factors that were deduced from the results of this study as being influential in consumer intentions and consumption of plant-based food alternatives in fast-food restaurants in Delta State, Nigeria. The specific critical factors emerging as significant include health consciousness, environmental awareness, social influence, perceived barriers such as taste and price, cultural, and economic factors. These findings explain the context-specific factors of the Nigerian market while tallying with the earlier study and, importantly, consolidating on previous research. The demographic data show that most of the participants in this survey might fall within the range of 18–35 years and possibly more educated. Secondly, a considerable number of respondents may have known plant-based food substitutes; however, there may be variability in the level of awareness. Researchers indicate that, out of all the factors, health consciousness comes out as the strongest indicator of intentions among consumers to eat plant-based meals. This can be attributed to previous evidence that the adoption of plant-based diets is, in essence, influenced mainly by concerns related to health

issues. Customers often feel that plant-based diets represent healthier options and help reduce their risk of contracting lifestyle diseases, such as obesity and heart conditions. Health consciousness is therefore likely to be an increasingly influential factor in the choice of foods, as there is greater awareness on nutrition-related noncommunicable diseases in Nigeria. It is also powered by the factor of health consciousness that affects the behaviors of consumers, and thus fast-food restaurants can advertise plant-based menu items showing healthy benefits due to the rise in health consciousness. Indeed, one might argue that with greater health consciousness, the intention to consume plant-based foods will be higher.

Though this might not be as strong as health consciousness in this case, ecologically concerned consumers may also have stronger intentions of adopting plant-based diets. Other social influences that could greatly affect consumer intentions are peer recommendations, social media trends, and cultural standards. Those people who perceive plant-based diets as socially acceptable are more likely to show stronger desires to try these substitutes (Ogunleye & Akinola, 2023). While not as strongly, environmental awareness also showed a significant positive association with consumer intention. Other studies have also documented that consumers' intake of plant-based foods can be affected by environmental concerns, especially in the case of younger and more educated customers (Syed & Conway, 2016). These results suggest that while there are environmental reasons amongst Nigerian customers, these are not most likely the key driving forces in their decision to buy. It may be that Nigerians are less aware than consumers in Western nations of the environmental effects of eating meat. Targeted education programs highlighting environmental benefits from plant-based diets could improve awareness of such benefits and potentially stimulate higher adoption rates. Many of our respondents indicated that taste and perceived quality are impediments to trying plant-based alternatives. These concerns perhaps weigh more than other factors such as cost or health benefits. The price being an obstacle was mentioned in most of the respondents' answers, bearing in mind conventional fast food as the benchmark where the plant-based alternatives come out pricier.

A few participants acknowledged that cultural tendencies to move toward traditional diets with plenty of meat create a barrier toward moving to plant-based alternatives. The relation between social influence and consumer intention is positive, which suggests that social norms and peer recommendation are very important for choices regarding one's diet. This study represents support for TPB, since the latter asserts that behavioral intentions are heavily influenced by subjective norms, or the perceptions of what other people think about one's behavior. Social influences may be most salient in Nigeria compared to individualistic cultures because of the cultural overtones of dining and social approval regarding dietary habits. This is also backed by the findings of the study by White et al. (2019), in which exposure to the plant-based diet either from peer networks or through social media, as well as social support availed from others, increases the possibility of its adoption. Through multiple regression analysis, the three main drivers of consumer intention have been identified, namely: environmental awareness, social influence, and health consciousness. Other perceived barriers, which generally include taste and price, were found to relate inversely to the likelihood of choosing plant-based diets. Quality and flavor perceived have emerged as key barriers to the acceptance of plant-based diets. This is in line with the findings of how health-conscious people are extremely reluctant to consume plant-based alternatives if they perceive them as tasting worse or being of lower quality compared to meals that include meat.

Two ways of overcoming issues related to taste are developing plant-based alternatives that are more palatable and hosting events on taste testing to reverse customer perception. The other major disincentive was price sensitivity. That is, the majority of participants reported their judgment of how plant-based foods were dearer than the traditional fast foods. It is in line with international studies, like Grasso et al. (2021), showing that inflated prices deter buyers from choosing plant-based options. Incentives or price discounts on plant-based products would likely attract more interest in using such products among the customers, given the financial burdens of many Nigerian consumers.

The consumer purchasing behavior of meat-based diet cultural affinity and economic constraints shaped it (Habib et al., 2021). Indeed, similar findings from other developing countries where cultural values and budgetary pressures set the tone for daily nutrition agree with the outcomes of this paper (Chege et al., 2019). Vegetable alternatives can be viewed as a deviation from local culinary customs, as for many regional dishes in Delta State, meat is commonly used as an ingredient. This cultural gap underlines the need for methodologies increasing the acceptability of plant-based diets by taking regional flavors and ingredients into account. The findings confirm the appropriateness of the Theory of Planned Behavior in understanding consumer intentions regarding plant-based food consumption. The important roles of health consciousness as a manifestation of attitudes, social influence as a source of subjective norms and barriers-price and taste-relating to perceived behavioral control lend support to TPB. Cultural and economic variables add weight to the breadth of application of TPB but also present an opportunity for an even more comprehensive explanation of consumer behavior in the Nigerian environment.

Conclusion

In conclusion, it shows that the factors contributing to consumer intention and consumption of plant-based food alternatives are health consciousness, environmental awareness, social influence, and perceived barriers due to taste and price. The findings form a basis for promoting plant-based diets in fast-food settings by identifying main motivators and barriers and, therefore, important implications for businesses and policymakers who would wish to spur sustainable dietary habits.

Recommendations

Based on the findings from the study the following Recommendations were highlighted:

1. Fast-food business should emphasize on health and environmental purposes of plant-based product benefits. More credibility will be gained by using influencers or recommendations by health professionals.
2. Businesses should make the preparations of plant-based food affordable and employ innovative ways of cooking to enhance the taste. Distribution of free samples or holding events for taste testing may also change perceptions about the taste.
3. Adding local flavors and ingredients to plant-based recipes may enhance their consumer acceptability. Traditional Nigerian dishes with the addition of plant-based protein substitutes may be provided by restaurants as an easy switch.
4. Discounts for frequent buyers or attractions for first-time customers in order to encourage people to try plant-based food should be encouraged.

Biographies

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PEER-REVIEWED PAPER

Norwegian Primary and Secondary School Teachers' Experiences Using Interdisciplinary Videos That Connect Food and Chemistry

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Abstract

*This study researched food and health (FH) and science (SC) teachers' broad experiences of how nine interdisciplinary food and chemistry videos functioned as pedagogical tools and their suitability in 6th and/or 9th grades at different schools, after the implementation of a new curriculum. In-depth interview data with SC (*n = *3 men) and FH (*n = *7 women, 1 man) teachers' experiences of seven teacher-chosen videos in three schools were analyzed by reflexive thematic analysis, within a design-based implementation research approach. The results showed four main themes: 1) interdisciplinary potential overlooked due to subject knowledge gaps and lack of collaboration experience, 2) the videos were quality pedagogical supplements that teachers needed to use wisely, 3) challenges in using the interdisciplinary videos based on curricula and pupil levels, and 4) support is needed to overcome barriers and reach interdisciplinary potential in schools. The results indicate that videos have pedagogical potential, particularly for 9th graders. The teachers seemed to need curriculum material and school management support to fully realize the interdisciplinary potential of videos, which may be of guidance for curriculum implementation studies. Future studies should include school surveys and broader qualitative studies to explore experiences with videos and supplementary curriculum materials.*

KEYWORDS: **FOOD AND CHEMISTRY, FOOD AND HEALTH TEACHER, INTERDISCIPLINARY VIDEOS, INTERVIEWS, SCIENCE TEACHER**

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Introduction

The term *interdisciplinary learning* has received renewed attention in several national curricula worldwide, as interdisciplinary competencies are increasingly recognized as essential in workplaces and society (Drake & Reid, 2018, 2020; Helmane & Briska, 2017). The concept of interdisciplinarity is described differently nationally and internationally and refers to different levels of integration between disciplines (Drake & Reid, 2018; Helmane & Briska, 2017; Kaufman et al., 2003; Moss et al., 2008; NOU, 2015). In this article, we understand interdisciplinary teaching and learning across curricula as "any form of dialogue or interaction between two or more disciplines" (Moran, 2002, p. 16). Furthermore, we use Bolstad's (2020) conceptual model of four levels of integration between disciplines as a discussion framework. This model is based on Kaufman et al. (2003), and Drake and Reid (2018). Contextually, it fits the Norwegian primary and lower secondary school systems.

The four levels of interdisciplinarity are: 1) intradisciplinary (or fusion), 2) multidisciplinary, 3) interdisciplinary, and 4) transdisciplinary (or curriculum integration). Level 1 represents one school subject that incorporates aspects from another subject. Level 2 represents work that is coordinated with a joint theme but in separate subjects. Level 3 represents subjects interconnected in terms of progression or parallel coordination. Level four represents school subject integration via, for example, a project. Bolstad (2020) argued that there is no "better" interdisciplinarity level, only different forms and, thus, interactions. Importantly, Drake and Reid (2018) suggested a gradual increase in integration between disciplines, aiming for higher levels of interdisciplinarity.

The latest national curriculum in Norway, *The National curriculum for the Knowledge Promotion 2020* (LK20), was implemented late 2020. The core curriculum in LK20 applies to all primary and secondary education and training; it facilitates learning in three interdisciplinary topics (Ministry of Education and Research, 2017): 1) health and life skills, 2) democracy and citizenship, and 3) sustainable development. These three topics are overarching, socially relevant, and serve to develop and bridge competence by working with issues from various school subjects. In addition to the core curriculum, each school subject has its own curriculum with competence goals. The three interdisciplinary topics are stated in connection with competence goals for subjects where this is relevant.

Food and health (FH; internationally known as home economics) and science (SC) are two school subjects with several similarities (Ministry of Education and Research, 2019a, 2019b). Concerning the relevance and central values of these subjects, we can find recognizable content elements, as described by Fooladi et al. (2023). FH is a school subject with great interdisciplinary potential (Haapaniemi et al., 2019) because of the subject's distinctive work with food and practical skills. SC has similar interdisciplinary potential (You, 2017), with an emphasis on experimentation, both theoretically and in a laboratory. The incorporation of knowledge from the FH curriculum into the SC curriculum, and vice versa, is plausible given that practical food preparation tasks, which constitute a significant component of FH, inherently involve the principles of chemistry and physics as exemplified by Paas and coworkers (Paas, Taar, Vänt, Mänik, Rossi, Palojoki, Anttila et al., 2025; Paas, Taar, Vänt, Mänik, Rossi, Palojoki, Haapaniemi, 2025).

Intriguingly, in the preface to the new Norwegian curriculum, official documents used the term *multidisciplinary* (NOU 2015: 8, 2015, p. 49). In the subsequent core curriculum, the government chose to use the term *interdisciplinary* without specifying various approaches to or levels of interdisciplinarity (Ministry of Education and Research, 2017). This allows for tensions and potential ambiguity for schools and teachers regarding curriculum interpretation (Biseth et al., 2022; Karseth et al., 2020).

The challenge with implementation of new curricula remains a recurring curricular dilemma in Norway (e.g. Borgen et al., 2023; Møller et al. 2023) as well as internationally (Drake & Reid, 2020; Gouëdard et al., 2020). Integration between two or more subjects indeed creates possibilities and challenges, within a complex and diverse system like schools. If teachers are guided by competence, autonomy, and relatedness, as described by Ryan and Deci (2000), and at the same time receive school support, they might develop their professional teaching role (Chiu et al., 2024) and potentially facilitate interdisciplinary learning intentions.

Over the past decade, particularly during the COVID-19 outbreak, there has been a consistently growing interest in leveraging digital tools and multimedia resources, such as videos, as pedagogical tools for pupils in primary and lower secondary education (Engeset et al., 2021; Federici & Vika, 2020). More than 50% of FH teachers in Norway occasionally used digital tools, and many wanted to use them more (Beinert et al., 2020). In SC, digital storytelling, including videos, is an example of digital tools that were increasingly used in primary schools (Korukluoğlu & Yucel-Toy, 2022).

As there is currently a lack of pedagogically sound videos connecting FH and SC, we employed a design-based implementation research (DBIR) approach (Fishman et al., 2013; Penuel et al., 2011), seeking critical input from teachers, to support improved interdisciplinary teaching and, possibly, learning. The use of a DBIR approach (Fishman et al. 2013; Penuel et al., 2011), particularly in SC education, has been strongly advocated (Penuel & Fishman, 2012). DBIR typically involves interdisciplinary teams but has not previously been used to include FH subject to our knowledge. Erjavšek and Kostanjevec (2026) has recently performed a Delphi method involving teachers, pupils and parents in home economics, highlighting the importance of involving stakeholders in curriculum development. Indeed, one-size-fits-all is not feasible in curriculum implementation as highlighted by OECD (Gouëdard et al., 2020). As introduced above, the ongoing challenge of implementing interdisciplinary work in schools remains persistent, aligning with a core principle of our DBIR approach (Fishman et al., 2013; Penuel et al., 2011).

First, we developed short videos in collaboration with various school stakeholders; second, we gathered feedback from key stakeholders, specifically teachers, about their experiences using the videos when teaching different pupils. This study explored Norwegian FH and SC teachers' experiences with how nine interdisciplinary food and chemistry videos functioned as pedagogical tools in 6th and/or 9th grades. There are a limited number of previous studies on interdisciplinarity within FH and SC contexts (Haapaniemi et al., 2019; Rauma et al., 2006), and currently no studies on teaching practices following the implementation of the new curriculum in Norway. The research questions (RQs) focusing on teachers' experiences were: 1) How do interdisciplinary videos function as pedagogical tools for teaching purposes in the two subjects?, and 2) How are interdisciplinary videos suitable for different grades and in different school settings?

Materials and Methods

Study Design

This present study concerns a teacher-led intervention using previously developed interdisciplinary food and chemistry videos in 6th-grade (11–12-year-old) and/or 9th-grade (14-15-year-old) pupils in primary and lower secondary schools. Educational design research (McKenney & Reeves, 2020) was used as a broad study design framework, with DBIR as the chosen specific approach (Fishman et al., 2013; Penuel et al., 2011). The chosen implementation support was brief and limited to initial presemester consultations between teachers and the project leader. The reasoning was to mimic stakeholders' contexts of teacher autonomy with methodological freedom, various contextual school structures, and the post-COVID-19 digital era. We used focus group discussions (FGDs) and thematic analysis to analyze and summarize teachers' experiences of interdisciplinary videos as pedagogical tools (Braun & Clarke, 2006, 2022). Furthermore, a relativist ontological and subjective epistemic position was adopted (Dieronitou, 2014; Punch, 2013).

Development Phase of Videos

Nine videos (Table 1) were developed from 2018 to 2019 during the preface to new curriculum implementation in Norway by an interdisciplinary group of teacher educators in SC (n = 1 chemist) and FH (n = 3 FH teachers). The videos were initially planned for upper secondary schools but deemed relevant for primary and lower secondary schools. The thematic focus was on the connection between food and chemistry, and on microbiological food-related processes. The scientific content of the videos was based on food chemistry and technology articles (Jekle & Becker, 2015; Martins et al., 2001) and university-level teaching books (Coultate, 1996; Fennema, 1996).

During the design phase of the videos, action research elements were key, as follows: 1) Short videos explaining chemical processes that occur during cooking were selected. 2) A pilot video was viewed by FH university employees, pupils, and teacher mentors connected to our university (n = 100), who answered an anonymous survey informing the planning of new videos. Feedback was generally positive, including the length, interdisciplinarity, and usability of the video, especially if the video was to be shown before a practical teaching lesson in FH. Also, most informants reported the scientific level as adequate for lower secondary school, that it was nice that a pupil asked the questions, and that they requested tasks related to the videos for future use by the pupils. The latter was not included at this point, as the usability of videos across different grades, subjects, and schools was the main focus at this point. 3) The first three videos produced were shown on an iPad along with a poster at a conference for FH teachers in Norwegian primary and lower secondary schools. Conference participants were asked to provide anonymous comments and suggestions for new videos by adding Post-it notes to the poster as a means of pretesting the videos.

Table 1 Overview of nine short (1.5–4.5 min.) interdisciplinary videos within food and chemistry topics

Video Title and Number (Duration in Minutes)		Short Content Explanation	URL (click CC for English Subtitles)
1)	Baking with Yeast Dough (1:35)	What happens when bread is roasted in an oven (Maillard reaction and caramelization)?	https://uia.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=148eebf8-3211-451b-a8a4-b05600c2e8a4
2)	What happens when you blend minced meat? (2:15)	The process of adding milk, salt, potato flour, and similar components to bind and dilute food	https://uia.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=7e189875-c051-4526-bf16-b05400969870
3)	Frying Meatballs (1:22)	What happens when meatballs are fried in the cooking pan (Maillard reaction, swelling)?	https://uia.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=525fd398-8180-4970-a4e1-b04e00a4fd98
4)	Why does the fruit turn brown? (2:46)	The process of what happens when fruit is cut in two and left on the table (oxidation and how to prevent it)	https://uia.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=025eee86-f9c6-4bc5-b773-b04f0064998a
5)	What makes yeast dough elastic and big? (1:57)	The importance of gluten in baking for elasticity and how yeast expands dough	https://uia.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=8db2648a-bb90-49cc-a9d-b04e00ec70e1
6)	What happens when we cook and fry fish? (4:01)	The process of muscle fibers and connecting tissue breaking down, frying makes the fish brown and flavorful	https://uia.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=c1accd11-18d3-4ace-bcf1-b05600728a73
7)	What happens when we cook and fry red meat? (2:52)	Meat constituents, why we cook/fry meat, the process of muscle fibers and connecting tissue breaking down, browning (Maillard reaction), and different types of meat in relation to the above processes	https://uia.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=1d4c4450-40e3-4a11-8a9d-b04f00d318d0
8)	What is an egg? (4:29)	Egg components, what eggs are used for, whipping of eggs, and eggs as a thickener of food	https://uia.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=ae559fde-0191-4b37-96aa-b0550031d438
9)	What is emulsification? (3:52)	Separation when mixing versus the process of emulsification (oil, water, emulsifier)	https://uia.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=e5411d39-e970-4607-ab26-b057010afd90

Setting, Recruitment, and Sample Characteristics

A convenience sample consisting of head teachers from six regional schools was sent an email invitation during the spring of 2021 and, if approved, forwarded to relevant teachers. The criteria for participation were that the SC and FH teachers had to teach in either 6th or 9th grade the following autumn. Four schools approved the invitation; however, due to sick leave, three schools participated. Two municipal schools, both large and small, and one private school, residing in two different cities, were included. Information meetings with relevant and interested FH and SC teachers in the 6th and 9th grades were held at schools during the spring of 2021.

The nine videos (Table 1) were introduced with a short discussion of their relevance to the school's periodical/yearly plans in FH and SC. Teachers were sent links to the videos and decided which ones they wanted to use in classes during the Autumn 2021 semester (August–October). Teachers could include a maximum of three videos each and were encouraged to plan how they would use them in their teaching, or whether they would collaborate with FH or SC. teacher(s) at their respective school. Teachers were provided with the project leader's contact information to facilitate dialog about the project, if necessary. However, they were principally given the autonomy to use the intervention videos as they saw fit. Thirteen teachers used the videos, of which 11 (85%) participated in in-depth interviews (as detailed in Table 2).

Table 2 Overview of schools, teachers' genders, subjects, grades, and videos used

Informant	School	Gender	Teacher's Subject	Grade	Videos Used (Number)								
					1	2	3	4	5	6	7	8	9
AA	A	Male	Food and Health	9		X			X				
AB		Female	Food and Health	9		X			X				
AC		Female	Food and Health	6		X						X	
BA	B	Male	Science	9				X			X	X	
BB		Male	Food and Health	6	X				X			X	
BC		Female	Food and Health	9	X				X				
BD		Female	Food and Health	6	X				X			X	
BE*		Male	Science	9				X			X	X	
CA	C	Female	Food and Health	6	X			X	X				
CB		Female	Food and Health	9	X			X	X				
CC		Male	Science	9				X				X	X

* = individual digital interview. Videos from Table 1: 1 = Baking with Yeast Dough, 2 = What happens when you blend minced meat?, 3 = Frying Meatballs, 4 = Why does fruit turn brown?, 5 = What makes yeast dough elastic and big?, 6 = What happens when we cook and fry fish?, 7 = What happens when we cook and fry red meat?, 8 = What is an egg?, and 9 = What is emulsification?

Focus Group Discussions

Three semistructured FGDs were conducted with groups of three to four teachers (8 FH teachers, 2 SC) who taught 6th and 9th grades. These discussions took place in person at schools or at the university (School C) between November and December 2021, as shown in Table 2. Additionally, one SC teacher from School B provided input through an individual Zoom interview after being unable to attend the focus group discussion, which added valuable perspectives to our data.

The rationale of the FGDs was to acquire in-depth accounts of teachers' experiences of the teaching usability of interdisciplinary videos in FH and SC in 6th and/or 9th grades. A semistructured interview guide focused on the aforementioned RQs with prompts; it included themes such as how the videos were used, advantages and disadvantages, interdisciplinary themes in schools, pupil learning, teachers' own learning from videos, previous use of videos, and suggestions for changes to the videos.

Before starting, the study aim was introduced. All interviews were conducted by two women university FH educators (VG and DE, both associate professors) and FH teachers with nutrition, environment, and health master's degrees; one moderated the interview, and the other made brief fieldnotes. The interview guide was tested in advance through a pilot conducted by two master-level student teachers who practiced with each other.

The moderator showed an image from the nine videos at the start of the FGDs as a means of making the teachers remember which videos they used in classes. The interviews ranged from 35 to 54 minutes, generating transcripts of 11–21 A4 pages. The interviews were audio-recorded, transcribed verbatim by a research assistant, and later analyzed by reflexive thematic analysis.

Reflexive Thematic Analysis

Two of the authors conducted reflexive thematic analysis on the transcripts using Braun and Clarke's framework (2006, 2022). Both analysts were associate professors working as FH teachers: VG (details provided earlier) and TB (man, with expertise in public health nutrition and a background in biology). This method was selected because it is flexible, structured, and broadly applicable to interview data. One FH student teacher at the master's level contributed to parts of the initial analysis. TB had specific experience with the analytical method and had completed additional educational coursework on it.

We employed an inductive approach, examining the complete dataset through the lens of our RQs; 1) How do interdisciplinary videos function as pedagogical tools for teaching purposes in the two subjects? and 2) How are interdisciplinary videos suitable for different grades and in different school settings? This data-based approach was opposite to deductively using predetermined theory or research (Braun & Clarke, 2022) as a narrowing analytical lens. It was chosen as 1) the literature on the theme and RQs was scarce, 2) and the curriculum implementation in Norway was in its early stages, also considering the COVID-19 epidemic. Further, our relativist ontological and subjective epistemic position described earlier, worked to give the selected informants, with their various contexts (different school settings, grades and school subjects), a proper but also researcher interpreted voice. Contextually, we found ourselves within a new curriculum paradigm of interdisciplinarity in Norwegian schools, with its inherent possible tensions as described in the introduction, where our approach of reinforcing unrestricted teacher experiences was appropriate. The analysis focused on identifying both explicit semantic content and underlying latent meanings that emerged during the FGDs. According to Braun and Clarke's (2006) thematic analysis, we first read and reread transcripts several times while taking initial notes, followed by manual coding, merging codes into tentative themes, and structuring data. Themes were then reviewed to sort out a coherent story that the analysis portrayed; this was followed by defining and naming the themes and subthemes, and finally producing a report.

The coding process began with separate individual analyses, followed by iterative and thorough group discussions. This involved going back and forth to debate and refine our interpretations of the data's meaning. Efforts were made to include relevant major and minor data in the analysis. Relevant research and theory, and the authors' understandings were used to critically interpret the data. The Consolidated Criteria for Reporting Qualitative Research checklist (Tong et al., 2007) was used in this study.

Ethics and Privacy Issues

Written informed consent was obtained from the informants, and they could withdraw at any time during the study. This study was performed in compliance with the Declaration of Helsinki, approved by the Norwegian Agency for Shared Services in Education and Research (NSD/Sikt number: 625609), and subsequently approved by the Research Ethics Committee (FEK) at the Faculty of Health and Sports Sciences (FEK number 21/09469-2). Immediately after recording,

the interviews were transferred from the audio recorder to secure digital storage. The data were then anonymized, and the original recordings were deleted from the device. Project data were stored confidentially on a safe server with hard copies of transcripts located in a locked cabinet.

Results

Selected Videos

The included teachers selected seven of the nine videos, with the exceptions being Videos 3 and 6 (see Table 2). Data from FGDs show that justifications for selected videos were based on pupil level, relevance for the teacher's subject, and timing according to their school periodical/yearly plan or curriculum. Other justifications were equipment issues and prior knowledge levels.

Each teacher chose two to three videos. Two SC teachers used the fruit video, cook and fry red meat video and egg video. One SC teacher used the fruit video, egg video and emulsification video. SC teachers all used videos once, except for one teacher who showed the video at both the start and end of class. Seven of eight FH teachers (87.5%) used the "What makes yeast dough elastic and big?" video, of which five (62.5%) also used the "Baking yeast dough" video in combination. Otherwise, the "minced meat," "fruit," and "egg" videos were used by three FH teachers (37.5%). No direct data were available from 6th-grade SC teachers due to illness during the scheduled FGDs. Information about these teachers' perspectives was only available indirectly through their colleagues.

Overview of the Themes from the Analysis Process

During the analysis process, four main themes with two to three subthemes emerged (Figure 1).

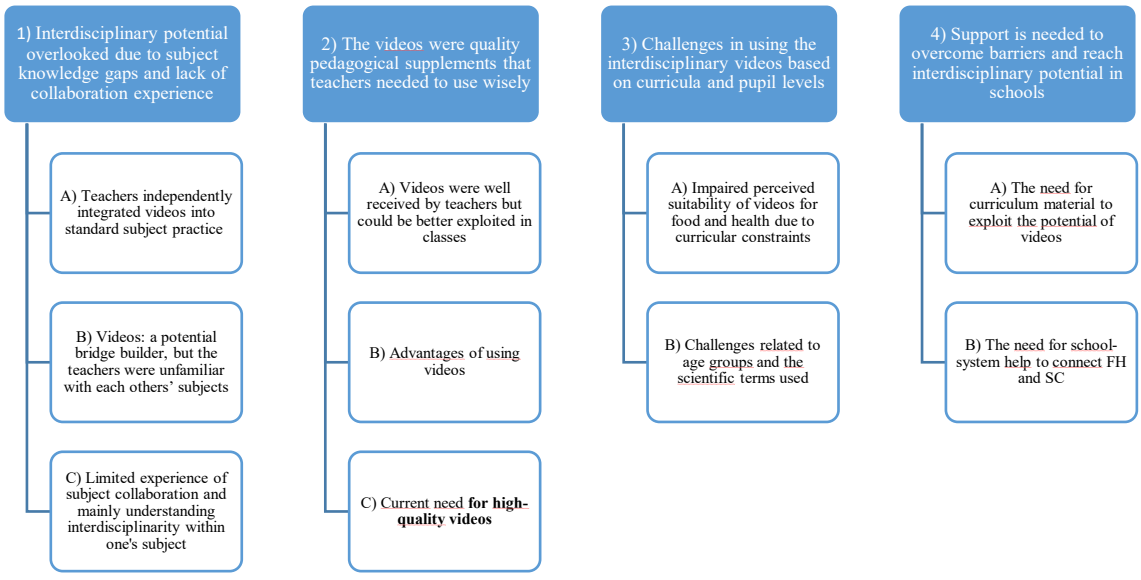

Figure 1 Overview of the main and subthemes emerging from the analysis of data from focus group discussions

Theme 1) Interdisciplinary Potential Overlooked Due to Subject Knowledge Gaps and Lack of Collaboration Experience

A) Teachers Independently Integrated Videos Into Standard Subject Practice.

All the teachers seemed to work in an intradisciplinary fashion and did not collaborate in practice, although a few acknowledged that colleagues used similar videos:

> We worked in an unorganized interdisciplinary way as well because we chose videos individually. (CC).

Most of the SC teachers expressed that they incorporated the videos into a broader teaching arrangement suited to their subject. Seen in detail, this included teaching arrangements such as: 1) experimentation, reflection, researching one's own theories before showing the fruit video, 2) pictures that stimulate thoughts and curiosity, explaining scientific terms before the fruit-related video, 3) explaining the attributes of food ingredients, testing prior knowledge, focusing on selected scientific terms, stimulating curiosity, showing pictures before the egg-related video, and then explaining, 4) tying the theme to everyday events and experiences with food separation, reflecting, and then showing the emulsification video, and 5) viewing the egg video followed by curiosity work, raising questions, and researching answers. This was followed by asking why fruit turns brown, creating a hypothesis, searching for explanations, testing, and trying different solutions, which was all done before viewing the fruit video. Also, the minced meat video was shown as an example of how to start with a question, how to research scientific terms, and how to find a common solution.

The fruit video seemed to be the most relevant video for the SC teachers, as illustrated below:

> I used all the videos once, but we spent a lot more time on one of them [fruit video]. It was easy to connect to the topic on which I was working, which was how to think scientifically; doing experiments. (BA).

The most common approach among FH teachers was to show videos in their theory class once or twice before the practical kitchen class. This was considered appropriate for FH classes, which are typically based on showing videos or practical instruction, cooking, observing cooking processes, and eating the inviting product they presented. FH teachers found the "What makes yeast dough elastic and big?" video most relevant to their subject. One FH teacher showed only the minced meat video in the kitchen. Some FH teachers connected the videos to recipes and asked questions during the cooking process to connect with the explanations in the videos.

Another FH teacher thematically focused on yeast dough for some weeks, and pupils could ask questions when yeast dough videos were shown, as shown in this quote:

> The pupils got to see a little and ask a little, and then it was also referred back to in the food and health class, to the video. Then they say, "Now I'm going to take out the pizza, what if it collapses again?", "Yes, do you remember that from... [video]". "Oh, yes." So that's how we've used them the most. (BB).

B) Videos: A Potential Bridge builder, but the teachers were unfamiliar with each other's subjects.

The teachers expressed a lack of knowledge of each other's subjects. In particular, FH teachers highlighted their unfamiliarity with the chemistry aspects of food science, for example, by saying "I'm not sure about any of the chemistry". Therefore, they chose to avoid some videos, particularly the blending minced meat video, and aspects of the baking yeast dough video. The

traditional ways of working in the FH and SC subjects also seemed to make the subject borders somewhat difficult to cross in practice, although some acknowledged that the videos were "interdisciplinary" and could fit both subjects. However, a few teachers did not initially see interdisciplinary potential when using the videos:

> I don't think I thought much about it [videos] being interdisciplinary then and there, no, but… It's certainly possible [that it was]. (AA).

However, during FGDs, most teachers expressed the benefits of interdisciplinary teaching in theory; for example, "Understanding that the ingredients one adds or how things [recipes] are done matters." A few teachers mentioned the focus on interdisciplinarity in the new curriculum, and that videos could "build bridges between subjects," and they underscored the importance of "connecting to life."

Teachers offered reflections about how pupils benefit from seeing connections across subjects rather than viewing each subject as isolated in its own "box-world." They observed that pupils "learn more" when they can make these interdisciplinary connections:

> The fact that this is relevant in various subjects, they [the pupils] can also feel a sense of achievement. … So it's really good…. So that, we are not disconnected in the school in a way. (AC).

C) Limited experience of subject collaboration and mainly understanding interdisciplinarity within one's subject

Collaborating with other subject teachers, particularly within FH and SC, seemed to be relatively uncommon, despite some saying, "We are encouraged to do more of it [interdisciplinarity] in school." Dialogs across subject borders concerning the videos were mainly restricted to presemester information meetings. Additionally, different teacher teams made collaboration cumbersome. Importantly, some teachers argued that interdisciplinarity should be applied specifically to subjects with relevant connections, such as through the interdisciplinary themes established in the curriculum. One teacher argued that it would be easier if one had responsibility for both subjects or if teachers really were to collaborate across subject borders. Most teachers' main understanding of what works in relation to interdisciplinarity seemed to be focused on connecting subject borders with overlapping themes in their subjects.

Also, some teachers found it futile to collaborate across subject borders, as illustrated in this quote:

> Interdisciplinarity for me is a bit like believing that everyone should constantly collaborate across disciplines, which for me is pure idealism because that doesn't work in practice… (CC).

Theme 2) The Videos Were Quality Pedagogical Supplements that Teachers Needed to Use Wisely.

A) Videos were well received by teachers but could be better exploited in classes.

Overall, the videos were accepted as a "nice supplement." The timing of using the videos was discussed by the teachers. Several FH teachers would ideally use a few videos later in their school periodical/yearly plans, after establishing kitchen routines, or to better fit pupil progress. The main drawbacks expressed by teachers were technical video aspects, although these were minorly significant:

> It has been consistently good quality, if you exclude the acting. (CC).

Some teachers, particularly among FH, were focused on using videos as per "recipe from the university" and, thus, ended up "just showing videos." Teachers generally reasoned that the videos needed to be explored more thoroughly in class, for example, "using 20 minutes of teaching on the three minutes of video." One cannot just show videos quickly to pupils and proceed to other themes in class, they argued. Many teachers wanted to use the videos more expansively in the future (e.g., connected to theory class in FH) as a means to exploit learning potential during cooking.

Alternatively, videos could be used "after cooking lessons." However, an obstacle in some FH kitchens was the lack of screens, and teachers had to bring a laptop or show videos when they had theory sessions in the kitchen, as they did not have access to theory rooms. Some teachers highlighted better coordination or planning among teachers as vital for pupils in terms of learning progress. Videos were not shared with pupils or given as homework or as a test or repetition, which, according to some teachers, could be useful.

B) Advantages of using videos

Several advantages of videos were highlighted by teachers, and the elaborations were, for instance, "short" "and thus fitting limited time in lessons, "easy," "concrete," "theme-based," "explanative with writing and drawings," and "easy to use repeatedly." Some teachers highlighted that the "video format is well suited for pupils" as long as it is not a "sleeping pill" being overused by teachers. "Adding variation" and "stimulating engagement and motivation" were highlighted by some teachers.

The fact that videos explain the *how and why of food processes (chemical processes)* compared to other available videos was underscored by some teachers:

> Exactly how a dough grows larger or something turns brown, ...that's probably something which appeals more to their way of getting an explanation of why it happens, so maybe that makes it more accessible, also the fact that they're [the videos] not long, that's hugely important… (BC, an FH teacher).

Also, the fact that pupils potentially encountered videos in two different subjects was underscored by some teachers. One SC teacher pinpointed that the videos enabled working on "research on a tangible thing," as processes related to food or real life, for example, rust, are often used in SC. One FH teacher was even inspired to focus more on chemistry in FH classes. Some also said that they learned the subject content themselves from the videos.

C) Current need for high-quality videos

Several teachers reflected on the fact that the videos were "scientific," "credible," and "of quality." Pure cooking videos, or commercial ones from internet portals such as Matprat.no, were commonly used in FH classes; thus, intervention videos were a "scientific supplement" according to several FH teachers. SC teachers saw the need for such videos "in their video bank" as well. Other videos commonly used in teaching were viewed as more superficial (like YouTube.com), and thus of "less scientific value" and could include commercials. Teachers would like even more thematically broad interdisciplinary videos in the future. A desire was also expressed to connect the school and university through noncommercial, trustworthy pedagogical tools, such as the following quote:

> There is also a quality aspect—knowing that the information presented [in the videos] is scientifically sound. When you find content on YouTube, while basic skills like cutting vegetables might be straightforward, you could easily encounter misleading videos, especially regarding controversial topics like meat consumption. Without proper vetting, these videos could lead pupils completely astray due to potential biases or inaccuracies. (BB).

Theme 3) Challenges in Using Interdisciplinary Videos Based on Curricula and Pupil Levels

A) Impaired perceived suitability of videos for food and health due to curricular constraints

Generally, more SC teachers than FH teachers expressed coherence between their subject, curriculum, and the use of videos. SC teachers seemed to be able to delve deeper into the themes, even though chemistry is a specific theme and not a broad theme in an SC curriculum. This was underscored in a quote from an SC teacher:

> So, I can see that it is interdisciplinary, but I think that you could put on the same video and say that it was science. And you could have taken the same video and also said that it was an extended food and health… with chemistry… (CC).

Through FGDs, a few FH teachers highlighted that some videos and cooking classes in the kitchen, typical of FH as a subject, became slightly "two separate parts," implying that support is needed to bridge this gap didactically, as shown here:

> A lot of it was probably a little more science-oriented because I can't find exactly what I should have justified it with in relation to the competence goals [in FH]… (BC).

B) Challenges Related to Age Groups and the Scientific Terms Used

While most selected videos seemed to be relevant for both 6th and 9th grade teaching situations, 9th grade was generally more suitable. There was a bit more need for tailoring the videos to the 6th-grade level. The scientific level was a bit high for some pupils but also relevant for academically strong pupils, the teachers argued. Some themes were fit for upper secondary school but depended on how teachers introduced the topic, and it could also be beneficial to see "the next level," teachers argued.

A particular challenge was the use of several unfamiliar or challenging scientific terms not extensively covered in the videos. This was particularly a challenge in FH classes, where the teachers expressed that they did not usually go into chemistry details in theory during the cooking sessions. Ideally, a few FH teachers would have to add a theory lesson to support pupils, but that was not always feasible. Several teachers addressed the need for videos to be tailored specifically for age suitability with respect to thematic content and scientific terms. This would potentially improve the learning outcomes for the pupils, the teachers emphasized.

A few teachers also did not remember or understand the scientific terms from the videos during FGDs and suggested that terms need to be worked on more in class:

> Well, one noticed that there was a difference in level, and concepts in particular. For example, in 'Why do fruits turn brown?'. I think [that video] was actually easier for them to understand than [the video of] baking yeast dough. Because there was talk of aromas and… there were actually many such terms and you could feel that they [the pupils] were kind of like 'Hey, what does that mean? Or… There were a lot of foreign words and many things that maybe should have been worked on more, which we didn't do then… (CB).

Theme 4) Support is Needed to Overcome Barriers and Reach Interdisciplinary Potential in Schools.

A) The Need for Curriculum Material to Exploit the Potential of Videos

Several teachers implied that the videos alone were "not enough" as pedagogical tools to envision interdisciplinary work. They elaborated that the videos could preferably be part of "a curriculum material" from our university, with the following suggestions for content: 1) A concrete didactical teacher guide with each video, 2) goals and tasks for pupils with assessment suggestions, 3) explanation of scientific terms, and 4) an easily recognizable link to the curriculum and competence goals in both subjects, supporting interdisciplinarity.

This was exemplified by an SC teacher:

> And perhaps even more so that it will not only be a video, but had there been a slightly more complete curriculum material around it… maybe with experiments, maybe with a division as to what food and health, to what science can do. With suggestions for follow-up work, suggestions for work along the way, and maybe even a type of assessment or, in a way, I think we are all looking for… (BE).

B) The Need for School-System Help to Connect FH and SC

Around half of the teachers underscored that they, as teachers with busy school schedules, needed support connecting the two subjects. "School administration," "joint ownership of project," and "school structures" were highlighted as crucial for successful teacher processes and subsequent pupil learning. Examples given by teachers were "limited free time" and "resources" for interdisciplinary work (i.e., planning and coordinating school periodical/yearly plans to achieve "real collaboration" and to support "progress").

One teacher pointed out how school management could help with interdisciplinarity:

> When we had interdisciplinary work in a primary school, we had a whole day to sit and plan it. So, there is an incredible amount of planning for it to be able to go ahead, but for those pupils who somehow find writing and school stuff boring, the interdisciplinary session we had there was incredible for different pupils. If we manage to get more of it [interdisciplinarity] into the school so that they see that what we are doing is important in various arenas, then I think that we can at least create motivation for those children, but it is demanding—it is the [school management] that has to help us with that. (CA).

Especially in lower secondary school, teachers work more with their subjects and are less flexible timewise, as some teachers pointed out. These barriers were less evident in primary school, although time was the main factor highlighted as a bottleneck for working across subject borders.

Discussion

Our DBIR study examined the discrepancies between how the teacher-selected interdisciplinary videos were designed versus how they were actually implemented in classroom settings (Fishman et al., 2013; Penuel et al., 2011), within the context of the early stages of a national curriculum implementation in schools. Specifically, we looked at how a set of interdisciplinary videos function as pedagogical tools for teaching purposes in FH and SC, and how are the videos suitable for different grades and in different school settings.

The teachers provided rich input during one iterative cycle of collaboration (Stage 2 of the DBIR). The interdisciplinary videos were found to be pedagogically useful in both SC and FH, particularly in 9th grade, and across the three diverse schools (although issues were raised concerning scientific terms). Various barriers at the personal, subject, and school levels were indicated. Teachers suggested that school-facilitating factors, such as curriculum materials and a school system that supports interdisciplinarity, could potentially harness greater interdisciplinary potential in schools.

In the following, we use Bolstad's (2020) conceptual model of four levels of integration between disciplines as a discussion framework. Competence is fundamental for developing a professional teaching role and enhancing pupil learning (Chiu et al., 2024; Jentsch & König, 2022). For interdisciplinary teaching, teachers must possess skills beyond their subject areas (Drake & Reid, 2018).

Our FGDs indicate a gap in FH and SC teachers' knowledge across subject boundaries (see, e.g., Rauma et al., 2006) and a lack of practical interdisciplinary experience beyond the intradisciplinary level (Bolstad, 2020). These individual barriers require structural-level solutions if we hope to achieve higher levels of interdisciplinarity, as intended in both national and international educational agendas (Drake & Reid, 2018; Meld. St. 28. (2015–2016), p. 37; Ministry of Education and Research, 2017; NOU 2015: 8, 2015, p. 49). Building interdisciplinary competence and practical training should begin in teacher education (Norwegian Ministry of Education and Research, 2017) and continue throughout teaching careers.

Our data suggests that the use of videos needs to be pedagogically well planned and fit into a school's periodical/yearly plan and curricula (Ministry of Education and Research, 2019a, 2019b). Supporting videos with concrete curriculum material might help realize the teaching potential of videos, as curriculum materials are important guiding tools in SC (Davis et al., 2016) and FH (Hernes, 2009; Rauma et al., 2006).

Curriculum materials are resources that guide teacher instruction in the classroom (Stein et al., 2007). Low self-efficacy, as described by Bandura (1997), may have hindered FH teachers' confidence and ability to fully utilize the interdisciplinary videos in our study, particularly regarding SC competence. For in-house SC teachers, the number of SC subjects studied, teaching experience, and the desire to teach with an interdisciplinary approach appeared to be important for achieving high self-efficacy (von Knebel et al., 2023). The notion of self-efficacy also best explains SC teachers' views on integrated SC education. This influenced their implementation of such education and their need for support (Haatainen et al., 2021).

The teachers in our study appeared to didactically select videos that were "close to home:" familiar and directly relevant to their subject comfort zones. This fits with the subject-specific contextual factors and working methods of FH and SC (Ministry of Education and Research, 2019a, 2019b). Furthermore, this may be a sign of alignment with core subject competencies and strong teacher autonomy with regard to choosing didactical methods (Veka et al., 2020).

FH is the smallest subject in Norwegian schools. Indeed, data from a Norwegian case study on the previous curriculum indicates that 6th-grade FH teachers seem to work individually and thrive with high autonomy with regard to planning their teaching. This suggests that their pedagogical and didactic positions dictate their teaching more than the curriculum does (Veka et al., 2018, 2020, p. 217–234).

SC is a larger school subject with a potentially greater professional community in schools, and is supported by professional learning communities' initiatives, as exemplified in Potvin et al. (2024). Though working on an intradisciplinary level (Bolstad, 2020), our SC teachers were generally more in line with the explorative perspective and pupil-centered learning found in the new national curriculum (Ministry of Education and Research, 2017). The bottleneck of teaching time is more evident in FH, with 197 hours compared to 650 hours of SC in primary and lower secondary schools. This may have hindered a more elaborate and explorative approach in FH, which could facilitate time for more pupil reflections, discussions, and critical thinking, such as that shown in Finland (Taar & Palojoki, 2022).

Internationally, primary and lower secondary schools are experimenting with various levels of interdisciplinarity in FH (Rauma et al., 2006) and SC (Haatainen et al., 2021; von Knebel et al., 2023). Finland, as an example, shows that such attempts seem to be more structured, with an integrative approach to learning (Haapaniemi et al., 2019), consistent with Drake and Reid (2018). In contrast, our study indicates the need for a more structured approach by school leaders to support teachers' interdisciplinary work, which is in accordance with Bolstad (2020), Gouëdard et al. (2020) and Nevenglosky, Cale and Panesar Aguilar (2019).

It is important that interdisciplinary efforts are not solely dependent on interested and competent teachers, as this makes such initiatives arbitrary rather than structural. A report by Borgen et al. (2025) indicated that interdisciplinary work is less common in practical–aesthetic subjects, suggesting more support for such small subjects.

Although the Norwegian Directorate for Education and Training (2025, May 2) is facilitating the implementation of the new curriculum, supported by teacher education, it is up to schools and their teachers how to approach this current era of interdisciplinary teaching. The transition to new curricula can be arduous (Gouëdard et al., 2020; Mabunda, 2023), often with a lag in which teachers adhere to previous school practices (Veka et al., 2020). There are indications that teachers in our study, in the early stages of curriculum implementation, are still in a learning process with regard to interdisciplinarity. There are also indications that the COVID-19 pandemic likely hampered curriculum implementation in Norway as well as globally, emphasizing the need for additional time and support (Borgen et al., 2023, Møller et al., 2023;).

A lack of time has been reported in earlier integration studies (Rauma et al., 2006). A report by Burner et al. (2022) suggested that school management is important for the implementation of a new curriculum through joint cultural school practice in professional teaching communities. Also, there is variation in support and organization, according to the teachers in Burner et al.'s (2022) report. There are indications to support that a lack of subject prioritization is particularly evident in smaller subjects, such as FH (Borgen et al., 2023). Thus, joint planning time seems to be important for achieving interdisciplinarity, according to the teachers in another study (Furberg et al., 2023).

According to a study (Biseth et al., 2022), Norwegian teachers found interdisciplinarity important when they participated in preparatory courses on the new interdisciplinary curriculum. However, this was less reflected in their current practices, highlighting tension within "the implementation gap" (Gouëdard et al., 2020) Correspondingly, our informants were generally positive concerning the potential for interdisciplinarity in theory. Several informants mentioned a desire for real collaboration (i.e., beyond interdisciplinarity) and touched on relatedness in FGDs, in line with Ryan and Deci (2000). As they had not collaborated with colleagues during the project, the informants appreciated the interdisciplinary discussions facilitated during FGDs.

In practice, their understanding of videos was mainly limited to working within their subjects, achieving Level 1 of Bolstad's (2020) model. This suggests a gap between interdisciplinary theory and practical school practice in line with Gouëdard et al. (2020), with potential barriers where teachers' interpretation of the videos in light of the curriculum was not met by contextual framework factors in the school.

Helmane and Briska (2017) discussed features, including critiques of various levels of integration in integrative teaching, namely multidisciplinary, interdisciplinary, and transdisciplinary. Intradisciplinary work may be easier and safer with regard to teacher competence, and such an approach avoids possible tensions with regard to teacher autonomy in teacher collaborations. Higher levels of interdisciplinarity require teamwork and communication, which by nature may be more time-consuming (Bolstad, 2020), and which appears to be a barrier in the implementation of the curriculum (Gouëdard et al., 2020).

A study of interdisciplinary teaching teams in Norwegian lower secondary schools indicated negotiations as well as coordination issues (Havnes, 2009), which our informants also expressed concern about. Furthermore, Havnes' (2009) study suggests the dilemma of reestablishing the school culture regarding teaching practices based on the involved teachers' experiences. Creating a shared project-collaboration with ongoing discussions seemed to be an important strategy for such interdisciplinary teams. Correspondingly, collaboration with other subject teachers might pose a potential obstacle to autonomy.

A Finnish study of home economics teachers showed no major issues with autonomy while working with integrative teaching (Haapaniemi et al., 2021). We can only speculate whether this is, in part, due to a more structural approach to interdisciplinary work. de Santana Santana and Prestes Massena (2024) argued that SC teacher autonomy is derived from interactions in school. In Norway, the collective teaching culture is connected to autonomy among teachers (Skaalvik & Skaalvik, 2021). Likewise, our data suggests that relatedness is important, which is aligned with Ryan and Deci (2000), and this should be considered in interdisciplinary work.

Overall, our results show interdisciplinary potential among Norwegian FH and SC teachers, particularly for achieving higher levels of interdisciplinary work as described by Bolstad (2020), which aligns with the new curriculum's interdisciplinary goals (Meld. St. 28. (2015–2016), p. 37; Ministry of Education and Research, 2017; NOU 2015: 8, 2015, p. 49). A more joint understanding among school leaders, teachers, and national curriculum governmental bodies of how to work in an interdisciplinary fashion may be a way forward in Norway and other countries with similar challenges.

Contextual framework factors, such as school leader support for competence building as interdisciplinary teachers, and relatedness connected to this process through allocating time and physical meeting places, were indicated as important in our study, and in line with core component three of DBIR and the above discussed literature. This is especially relevant in lower secondary schools, where time constraints and limited teacher autonomy present greater challenges. Additionally, this approach addresses developing schools' capacity for sustained systemic changes like interdisciplinary work, aligning with the fourth core component of DBIR previously discussed.

Strengths and Limitations

To the best of our knowledge, this study is the first to report on the latest national curriculum implementation between FH and SC with regard to interdisciplinarity in Norway. Although recurring themes were evident during the analysis, three schools with seemingly varying interdisciplinary cultures and variations in how often the videos were tested must be considered when interpreting the results. Data saturation may not be a goal in inductive research (O'Reilly & Parker, 2013). However, the above discussion, together with coherent results across schools, suggests that the issues raised by teachers are relevant concepts in schools.

One limitation is potential informant selection bias, with only three science teachers (all men) and no representation from 6th grade due to availability constraints. One individual interview was included due to the elaborate data on the use of videos. As not all teachers were present at the presemester information meeting, and the video testing period was limited to a few autumn months, how teachers approached the project and which videos were selected may have impacted our findings. Neither of the data researchers has a formal teaching background in SC; however, both have had interdisciplinary experience and some thematic relations with SC. A strength of this study is that data analysts were independent from the video design and usability testing processes, while feedback from key DBIR stakeholders included both positive and negative perspectives.

Conclusion

The interdisciplinary videos were well received as pedagogical tools in FH and SC subjects (particularly in the 9th grade) and across the various schools, but their use needs to be pedagogically well planned. Despite Norway's new national curriculum emphasizing interdisciplinary teaching, teachers continued traditional subject-specific approaches when implementing food and chemistry videos. This present study suggests barriers to interdisciplinary teaching at the individual, subject, and school levels. Key facilitators for realizing future interdisciplinary potential, according to our DBIR teacher study, include school management support and curriculum materials that complement the videos.

Future studies should include school surveys and broader qualitative studies of teachers', school leaders', and pupils' accounts. Early-stage teacher involvement during pedagogical tool modifications is also essential for success. Collectively, these approaches could possibly enable successful implementation and nationwide scaling in curriculum implementations across Norwegian schools, and possibly internationally, if DBIR design or similar approach is chosen.

Data Availability

The anonymous data supporting the findings of this study are available upon request from the corresponding author, TB.

Declaration of Interest Statement

The authors declare that they have no competing interests.

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TB, VG, DE, and MR conceptualized and designed this study, with PP contributing to the study design. VG and DE (FH teachers) collected data, while VG led the project and acquired funding. TB and VG analyzed and interpreted the data during the first phases and TB in the final phases (with input from VG). TB led the drafting of the manuscript, while all the co-authors contributed by reviewing and editing it; all approved the final manuscript.

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PEER-REVIEWED PAPER

Hydroponic Shipping Container Farms: A Case Study Exploring Opportunities and Barriers to Implementation in Educational Settings

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Abstract

Hydroponic shipping container farms (HSCF) are an emerging tool used for educational purposes in schools. This case study explored key opportunities and barriers to the implementation and integration of an HSCF food education program in Western Canada. Methodology: A yearlong case study was conducted utilizing interviews and naturalistic observations. Findings: This study found that key opportunities for program implementation were partnering with a committed community champion and strong administrative support, while key barriers were the high financial costs and labor requirements of running an HSCF and an isolated HSCF teacher champion. Together, these opportunities and barriers illustrate the complex operational demands of implementing HSCFs in school settings. Research Limitations: This study focused on one school, which operated one of many different possible HSCF designs. Practical Implications: Overall, HSCF as an educational tool should be questioned due, in part, to potentially unattainable financial and labor requirements. However, more research is needed to confirm these findings and determine whether HSCFs are an appropriate tool in diverse educational settings.

KEYWORDS: **FOOD EDUCATION; HYDROPONIC SHIPPING CONTAINER FARM; SCHOOL FOOD; SCHOOL FARM; SUSTAINABLE CITIES AND COMMUNITIES**

Introduction

Today's food systems are unsustainable and central to many global economic, environmental, and social issues, including resource scarcity, poverty, hunger, and climate change (Araújo et al., 2023; Rockström et al., 2025). Current food systems are also perpetuating racial and social inequalities, as marginalized groups around the globe continue to suffer the largest consequences of harmful environmental and social food system externalities (HLPE, 2023). Although changes are urgently needed at all levels of the food system, research suggests that the most effective consumer-side action that individuals can take is choosing sustainable foods (IPCC, 2022; Reisch et al., 2013). Sustainable foods are those that consider environmental, social, cultural, and economic sustainability at all stages of the food supply chain (Garnett & Fischer, 2016; Willett et al., 2019). These foods are also beneficial for individual health because

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they are high in fruits, vegetables, and whole grains and low in red and processed meats (Hedenus et al., 2014; Rockström et al., 2025). Therefore, empowering individuals to choose sustainable foods is a major opportunity for a positive food system transformation and individual health improvement.

Schools are an ideal environment for incorporating sustainable food education, as young people spend a significant amount of time there. Integrating food education in schools directly connects to global agendas and several Sustainable Development Goals, particularly SDG 2 (Zero Hunger), SDG 4 (Quality Education), SDG 11 (Sustainable Cities and Communities), and SDG 12 (Responsible Consumption and Production) (United Nations General Assembly, 2015). Additionally, the intention of many educational systems is to develop an empowered and educated citizenry who are aware of their responsibility to actively participate in local, national, and global communities (Government of BC, n.d.). Schools can affect how young people engage with food and are seen as critical places for transforming knowledge into action (Hawkes et al., 2015; Story et al., 2009). Thus, learning about food systems at a young age can assist young people in moving from passive consumers of food to active participants in their food system, recognizing the health and environmental implications of their food choices (Varela et al., 2024).

Hands-on food-related learning opportunities have been shown to be effective pedagogical strategies that can have a positive impact on students' health and food choices (Charlton et al., 2021; Varman et al., 2021). Examples of these hands-on opportunities include school farms (S. Blair et al., 2023), cooking programs (Vaughan et al., 2024), farm-to-school programs (Mishra et al., 2022), and school gardens, which have an extensive body of literature supporting the many benefits students can afford. For example, school gardens have been shown to increase students' intake of fruits and vegetables (Wells et al., 2023), improve their diet (Chan et al., 2022), increase academic performance in math and science (Berezowitz et al., 2015; D. Blair, 2009; Wells et al., 2015), increase their connection with nature (Passy, 2014), and increase their knowledge about the environment and sustainability (Amiri et al., 2021). Although school gardens and other outdoor food education programs have many potential benefits, a major drawback is the seasonality of outdoor spaces. In northern countries with variable climates, such as Canada, schools are no longer in session when garden produce is ready for harvest. Therefore, there are only a limited number of months in the year in which students can be involved in garden-based learning. The use of indoor growing systems for hands-on experiential learning opportunities related to food is a promising alternative.

Nonconventional methods of agriculture have seen an increased interest commercially, as well as in community settings, because of the environmental impact of conventional agricultural methods as well as the growing demand for locally grown food (Feldmann & Hamm, 2015; Grebitus et al., 2017; Kirschenmann, 2010). Hydroponic food production is one such method (Walters et al., 2020). Hydroponic production involves the production of plants using an inert medium and adding a nutrient solution instead of the soil (Resh, 2013). Although hydroponic methods of food production were developed in the 1940s (Bouchar, 1998), and have been used in an educational context since the 1950s (Goddard, 1953), hydroponic shipping container farms (HSCF) are a more recent form of hydroponic food production within a controlled environment that is now being used both commercially and at educational institutions (Stapleton & Meier, 2022; Wagner et al., 2021).

HSCFs are shipping containers that have been converted into controlled soilless hydroponic systems. The benefits of HSCFs include the potential to meet the demand for locally produced food (Wortman & Lovell, 2013), a 70–90% reduction in water use compared to conventional agricultural methods (Raviv & Lieth, 2008), and the ability to produce food at any time of year. HSCFs are an emerging food education tool, and there is growing interest in using these units to feed and educate students at schools. Due to this increasing interest, many HSCF distributors, including the American companies *FarmBox Foods* and *Growtainers*, and the Canadian company *Growcer*, have begun marketing their products to educational institutions (Farmbox Foods, n.d.; Growcer, n.d.-b; Growtainers, n.d.).

Although studies have evaluated the potential of smaller hydroponic systems, such as hydroponic tower gardens, in educational settings (Carver & Wasserman, 2012; Jon Schneller et al., 2015; Patchen et al., 2017), there is limited research on HSCFs as educational tools (Stapleton & Meier, 2022; Wagner et al., 2020). This is a noteworthy research gap, as HSCFs represent a distinctly different educational tool when compared to smaller indoor and/or hydroponic systems because of several factors including purchasing, installation, and operating costs, size, energy and water use, production potential, and time required to operate the HSCF. Therefore, understanding both the potential drawbacks and benefits of such an investment could aid schools in deciding whether HSCF is the right tool for their specific needs.

This study aimed to explore a school's experience implementing an HSCF education program with a focus on key barriers and opportunities for program implementation and integration within the school. As HSCFs are an emerging tool used in educational institutions, it is important to investigate the process of starting and running these units, as it could provide key insights into the potential of HSCFs in educational settings. Although the educational goals and outcomes of the HSCF program are important, they are being analyzed in a separate paper and will not be discussed here. Additionally, there were several important findings related to the design of HSCF when utilized in an educational setting. These findings are outside the scope of this study and have been published separately (Edwards, 2024). Therefore, this study focuses solely on factors influencing the implementation and operation of HSCF from the perspective of program participants.

Methodology and Methods

This paper presents some of the results of a PhD dissertation (see Edwards, 2023). A case study methodology was used, which is a methodological approach that allows for an in-depth understanding of a phenomenon from the perspective of participants (Yin, 2009). Additionally, case studies are appropriate for investigating educational programs (Grauer, 2012; Hamilton & Corbett-Whittier, 2012). The purpose of this case study was not to evaluate the educational program; rather, it attempted to develop an understanding of the program and barriers and opportunities to implementation (Grauer, 2012; Hancock et al., 2021). Other qualitative case studies in the field of food and health education have used case study methodology to gain an in-depth understanding of educational programs within their specific contexts (Gisslevik et al., 2019; McHugh et al., 2021).

Ethics

Ethical approval for this study was obtained from The University of British Columbia [H21-00961]. All participants provided informed written consent to participate in the study. In the case of minors involved in the study, written informed consent was given by parents/guardians, and written informed assent was given by the student study participants themselves.

Research Site Context

This research was conducted at a middle school located in a large population center in Western Canada. At the time of the study (2021–2022), the student population consisted of approximately 800 students in grades 7 through 9 (ages 12–15) and was a mix of students coming from a variety of socioeconomic backgrounds. In 2019, the school received an approximately $250,000 Canadian dollar (CAD) grant from a Canadian charity to purchase, install, and operate an HSCF on the school grounds. This school was chosen by the charity to pilot the use of HSCFs in educational settings. The school found out about the grant through a friend of a school administrator and, through strong leadership, the support of the parent advisory group, and one teacher who was motivated to be involved put together an application and were ultimately successful in receiving the funds for the HSCF. This research project had no association with the charity or funding provided to the school.

The HSCF installed at the middle school was a 40-foot shipping container that had been retrofitted with a hydroponic growing system that could produce approximately 300 heads of lettuce per week. The unit consisted of a small front area containing the seedling chamber, a small table, the unit's water tank, and large containers of nutrient and pH buffer solutions. The main growth area was a long narrow corridor with four levels of racks on each side. Each rack had a depth of five rows of trays where the plants could grow. The unit was bought from a company that specializes in manufacturing HSCF units and is one of several possible models produced by the manufacturer.

The middle school had two overarching goals for utilizing the HSCF: educating and feeding students. However, this paper will not focus on these goals specifically, as they will be discussed in other papers that are currently being written from this research. Instead, this paper focuses on the actual implementation of the HSCF and potential opportunities and barriers for integrating these units into educational settings. Although the HSCF was installed on school property in summer 2020, the school was not able to fully utilize the HSCF in the 2020–21 school year due to the COVID-19 pandemic. Therefore, the year of the study (2021–22) was the HSCF's first full year of operation, when it was running at full production capacity and operating as an educational tool for students within the school.

Researcher Positionality

The author acknowledges that their background and experience may have impacted data collection and analysis due to researcher bias. Prior to this research, the researcher had a background in food education and spent time working in and with schools. Therefore, the choice of research methodology and interpretation of results were influenced by these experiences and the belief that all young people should be equipped with the tools and skills to be active participants in positive food system transformation. Although they had experience with food education in general, the author had no previous experience with HSCFs. Consequently, their perception of the units in educational settings evolved throughout the study and was based on the researcher's interpretation of participants' experiences. Throughout this research, the author sought to reflect on how their life experiences and privileges may unintentionally influence the research process (Dodgson, 2019).

Therefore, this study was informed by an interpretivist constructivist theoretical approach, which assumes that educational programs are shaped by the social, organizational, and material conditions in which they are implemented (Thanh & Thanh, 2015). Consistent with this perspective, the case study design prioritized understanding participants' experiences and the contextual factors influencing the implementation of the HSCF, rather than evaluating program outcomes. This theoretical orientation aligns with qualitative case-study traditions that emphasize the importance of situated meaning-making, context, and lived experience in educational research.

Research Participants

Overall, 19 individuals participated in this study. The participants included students, teachers, school administrators, community members, and charity employees. Table 1 provides a breakdown of the number of participants by type.

Table 1: Number of Participants by Participant Type

Participant Type	Number of Participants
Students	8
Lead HSCF teacher	1
School administrators	2
Teacher candidates	1
Other teachers	4
Community partners	1
Charity employees	2

Pseudonyms were used throughout the paper to identify both individuals, the school being considered in the research, and any other factors that could lead to the identification of the school and participants.

Data Collection

The data were collected between November 2021 and June 2022. Data were collected through naturalistic observations and semistructured interviews with participants (Cohen et al., 2011; Creswell, 2014). To conduct naturalistic observations, the researcher was in a school environment two to three times per week for the duration of the study. Most observations occurred within the classroom where the researcher attended and volunteered with the HSCF classes. To record observations, the researcher took physical notes on site and then later transferred them to a digital format. The extent and impact of this volunteer role will be discussed further in the Results and Discussion sections of this paper. Overall, the researcher spent more than 160 hours in school over the course of the study. Interviews were conducted both in-person and online and focused on participants' experiences with the HSCF program. Interviews were open-ended, which allowed flexibility and unique participant responses (Fontana & Frey, 2000). In total, 19 interviews were conducted with individuals both inside and outside the school, including teachers, administrators, students, and community members.

Data Analysis

Following the transcription of interviews, the interview transcripts were uploaded to NVivo software and then analyzed using Braun and Clarke's (2006) method for thematic content analysis. Although Braun and Clarke's methodology is from a psychology disciplinary perspective, it is also useful in educational research contexts and has been used in this way (Kushnir, 2025). The researcher's interpretation of the data was informed by their continued presence within the school environment and their interaction with the research participants.

Results

This section presents research findings on key opportunities and barriers regarding the implementation and integration of HSCF into Canadian middle schools.

Opportunity: Community Connections

At the onset of the study, the school had strong community connections, and several more connections were established throughout the duration of the study. Having these community connections and contributing to the community was identified as an important goal of the HSCF. For example, one school administrator said that a goal of the HSCF was:

> to make a difference in our community and share with the community. (Mark).

One important community connection was the involvement of a strong community champion. The community champion was a local grocery store owner, Sam, who became connected to the school through personal connections with school administrators and informed the school about the HSCF grant that they eventually received. This community champion was able to help the HSCF program overcome some of the most significant challenges it faced as well as initiate other community connections that led to valuable learning experiences for the students involved in the HSCF program.

For example, a major barrier faced by the HSCF program is the lack of refrigerated space. HSCF consistently produced over 300 lettuce heads per week. However, the school had the capacity to refrigerate less than half of the full HSCF harvest. Sam was able to help the school overcome this challenge by selling HSCF produced at his grocery store. The school was responsible for transporting the produce to the grocery store; however, once at the store, grocery store employees would pack, label, and sell the produce. One hundred percent of the profits generated from the produce sold at the grocery store was donated back to the HSCF program. This partnership allowed produce that could not be stored at the school to have a cool place to be stored, thereby allowing the HSCF to run at full capacity. Additionally, this connection allowed the school to generate some money from sales of HSCF produce, although not a significant amount. As Mrs. Smith, the teacher responsible for running the farm, stated:

> I think I only have about $900 CAD in the bank from sales with Sam.

The school's connection with Sam also led to several important learning opportunities for the students. Sam was a well-connected member of the community and, therefore, was familiar with several local farmers, businesses, and nonprofit organizations working in the food sector. Sam was able to connect the school with some of these individuals/organizations, which led to two important field trip learning opportunities for students involved in the HSCF class. One was a local organic orchard, and the other was a local farm that grew food to be used in a city-wide school backpack lunch program.

Establishing connections within the community was something Sam viewed as important. When describing his involvement with the HSCF program he said that he:

> connect[s] people with the right connections, allowing people to experience different things. (Sam, community partner).

Not only did Sam view his role within the community as important, but he also believed that his involvement with the HSCF program was a responsibility he had due to being a business owner in the community. This is evidenced by his assertion that:

> I believe that we have a requirement as business leaders to do what's right for the community and the environment." (Sam, community partner).

A second example of a partnership that developed over the 2021–22 school year was a local business that bred insects to be used as a source of protein in food products that would be eaten by humans. This insect farm was connected to the middle school and became interested in obtaining waste from the HSCF to be used as a source of food for the insects at their establishment. The insect farm began collecting HSCF waste/compost from the middle school weekly, at no cost to the school. This composting program was not only mutually beneficial for the school's HSCF and the insect farm, but it also initiated a school-wide composting program at the middle school. As Mrs. Smith, the lead HSCF teacher, asserted, "this is a great relationship because we do not actually compost on site and it's free for us at the school." Therefore, HSCF was able to act as a catalyst for positive school-wide initiatives related to food.

Opportunity: Strong Administrative Support

At the onset of the study, it was clear that the school had strong administrative support for the HSCF program. School administrators were instrumental in the initial application of the HSCF and were committed to supporting the HSCF's integration into the broader school environment. For example, the school administration advocated at the school district level for the initial HSCF grant application and for paid time for Mrs. Smith to attend to HSCF-related activities. One school administrator stated:

> We worked with the district and supported the modular farms. They gave us extra time to cover the work on it for the school and to cover the block of time, which was about $17,000 CAD. (James, school administrator).

The extra block of time to which James is referring is an approximately 78-minute block of time. At middle school, each class was considered one block and alternated between occurring twice per week or three times per week. Additionally, the teachers were given time to prepare for the classes they taught. Another school administrator, Mark, emphasized the advocacy needed to get this additional time when he said, "we were given one block of time, which is what I could afford from the budget. And then I was able to lobby at a district level for another block of time for Mrs. Smith."

This advocacy at the district level was a crucial first step in receiving future support for the HSCF. Mrs. Smith asserted this importance when she said:

> I think what we'll need in future, we really need our district to see this as a beneficial thing to invest in because it's a lot for me to operate, run the programs, and then also create a curriculum around it.

Therefore, it was a significant achievement that the school administration was able to secure the lead HSCF teacher some paid time for HSCF operation, and their continued advocacy underscored their commitment to the HSCF program.

Barrier: Costs

As previously mentioned, the middle school received approximately $250,000 CAD from a Canadian charity to purchase a HSCF and install it on the school property. The funding covered purchasing the HSCF unit as well as financial support for operating the HSCF for five years (originally three years but funding was extended due to the COVID-19 pandemic). Although the large amount of funding seemed to be an opportunity at the beginning of the study, financial concerns emerged as one of the largest barriers to program implementation over the course of the research. For example, despite the large amount of funding received upfront, the school still required additional financial support, which resulted in the school taking a $50,000 CAD loan from its parent advisory committee. The school administration wanted to place the HSCF somewhere on the school property where it would be visible to people passing by the school. Therefore, the loan was required to cover the expenses of extending the utilities to this location on school grounds, resulting in the school already being in considerable debt before HSCF operations commenced. Upon discussions with program participants, it was unclear whether this cost was considered when the school first decided to apply for the grant.

Regardless of the $50,000 CAD loan, finances were still a major concern for the HSCF program. Once the charity stopped funding the HSCF, the school would be responsible for the yearly operational costs of the HSCF which, according to the HSCF manufacturer, were estimated to be between $5,000 and $7,000 CAD per year. As one of the charity employees stated:

> [The charity is] committed to covering the costs of the expenses of operating the farm for five years so that the school can sort of bring their head around how they cover those expenses going forward. It could be between five and seven thousand dollars annually to operate the farm beyond the cost of the farm itself. (Lily).

The yearly upkeep costs of $5,000 to $7,000 CAD/year indicated by the HSCF manufacturer and funding charity accounted for the cost of supplies and technical support running the HSCF. This amount of money was significant for the school, and Mrs. Smith said:

> A school is not going to have $7,000 a year to put towards a program that does not necessarily impact all students … we need to find a way to bring that yearly subscription cost down.

Therefore, although the charity was committed to supporting the HSCF for five years, the school needed to find a way to make the HSCF financially sustainable so that it could continue operating after support from the charity had ended. The $5,000 to $7,000 CAD yearly upkeep costs indicated by the HSCF manufacturer may have been underestimated, as some grey literature suggests that HSCFs could cost between $8,000 and $16,500 USD ($10,045–$20,718 USD adjusted for inflation) for annual (Hicks, 2017).

The pressure to make the HSCF financially sustainable before charity funding ended had a significant impact on the way the HSCF was run. Most of the responsibility for making HSCF financially sustainable was placed on the lead HSCF teacher, Mrs. Smith. This led Mrs. Smith to operate the HSCF in a businesslike way and have less time or energy to focus on broader educational goals. Additionally, the amount of time required to operate the HSCF led to most of the class time being spent operating the HSCF.

The researcher reached out to the funding charity but was unable to receive clarification or details about exactly how all the funds were being used and by whom. Individuals within the school also did not have a clear picture of where the charity's funding was used. This lack of transparency in funding charity is potentially concerning and makes it difficult to understand the full financial costs of installing and operating an HSCF on school grounds. However, on one HSCF manufacturers' website, the cost of purchasing an HSCF starts at $205,640 plus shipping costs (Growcer, n.d.-a), whereas other manufacturers do not show pricing on their websites. The charity may have been able to obtain the unit for a lower price; however, it is likely that most of the grant money was spent on purchasing the HSCF unit itself. Additionally, the utility costs of operating the HSCF were unclear, as they were not paid for by the school itself, and Mrs. Smith was unable to get a breakdown of costs when she attempted to investigate.

Barrier: Labor Requirements

At the middle school, each class was considered one block, lasted approximately 78 minutes, and alternated between occurring twice per week or three times per week. In the 2021–22 school year, Mrs. Smith had three blocks of time to attend to HSCF operations. One block was dedicated to running the HSCF, one block was the HSCF class itself, and one block was her prep block for the other classes she taught (which she often used for HSCF tasks). Therefore, depending on the week, Mrs. Smith was given between 7.8 hours (when the HSCF class was twice a week) and 11.7 hours (when the HSCF class was three times a week) of paid time per week to operate the HSCF. This includes one block that was supposed to be dedicated to prepping for other classes and one block that was an HSCF teaching block that included students. The amount of time the HSCF manufacturer indicated would be required to operate an HSCF was at least 15 hours per week, as indicated by Mrs. Smith's statement:

> The [HSCF company] says that it is about 15 hours of dedicated time for a single person to run a farm. However, that is to grow and harvest, not the packing and distribution parts. So, that's a little under budget for that estimation I would say if you are doing it all yourself.

However, it is unclear why the HSCF manufacturer would have indicated to Mrs. Smith that labor requirements were 15 hours per week, as various HSCF manufacturer websites state much higher labor requirements. For example, Growcer states that one of its units requires 30 hours of work per week (Growcer, n.d.-a), and most other company websites do not share this information. It is important to note that these labor estimates only include the time required to operate an HSCF and not the time needed to pack and distribute produce or integrate the HSCF as an educational tool within the school. In addition, research suggests that HSCF manufacturers may underestimate the time required to run a unit. For example, in a study investigating the potential of HSCFs in commercial settings, Wagner et al. (2021) found that "running the unit was much more time consuming than promoted by the vendor" (p. 523). Therefore, despite the administration securing an extra block of time for Mrs. Smith to spend operating the HSCF, she was given nowhere near enough paid time to run the HSCF effectively. This resulted in Mrs. Smith spending many extra hours volunteering her time to run the HSCF, as well as using the time she had with students to operate the HSCF rather than engaging students in educational activities related to the HSCF.

Barrier: Isolated Teacher Champion

Although Mrs. Smith intended to share the responsibility of the HSCF with other individuals, trying to find other people within the school who were interested in assisting with operating the HSCF was an ongoing challenge. Having a teacher who is primarily responsible for HSCF is problematic. Without adequate support, the HSCF program at the middle school is susceptible to shutting down if, for example, Mrs. Smith burnt out or moved to a different school. In fact, this exact scenario occurred at the first HSCF funded by the Canadian charity. As Mrs. Smith explained:

> The first [HSCF] ran for a year. Then, the teacher had to leave because of the family circumstances. Now that the farm is sitting inactive. Nobody's running it … if I were to leave or something was to happen to me, then [the HSCF] program will not necessarily continue on.

Therefore, training additional staff on how to run HSCF is crucial for the long-term sustainability of the program. However, it proved difficult for Mrs. Smith to convince other teachers to become involved with HSCF, as this would be a volunteer task in addition to their normal teaching duties.

The charity itself recognized the large commitment required to run a HSCF and how that workload may be placed on just one individual within a school. This is demonstrated by one charity employee's statement:

> It's [food education programming] just something that people do off the side of their desk. In most cases, the work, we're so dependent on one person having a passion. And if that person moves on, those schools are without. (Lily).

Although they were aware of the unsustainability of a program when one person is primarily responsible, they had hopes that the programs they funded would be different. However, they did not provide any guidance to the middle school as to how to build such a system of support around Mrs. Smith.

Finding additional support is critical for the future of the HSCF involved in this study. As mentioned previously, the researcher volunteered in the HSCF class. This volunteer role was essential for the operation of the HSCF class. The nature of the researcher's volunteer role was to help the lead HSCF teacher when they required help throughout the year. This helped to supervise half of the class when students were working in the HSCF, assisting with HSCF chores, and transporting harvested produce to a nearby grocery store. In terms of class supervision, only four students could comfortably fit in the HSCF at one time, resulting in the other half needing to be engaged in other projects or chores outside of the HSCF while the other half worked in the HSCF. Therefore, two adult supervisors were required when the students spent time in the HSCF.

The transportation of harvested produce was also critical for the operation of the HSCF. Normally, produce needed to be stored immediately following harvest to prevent wilting. The researcher was able to quickly transport the produce to a nearby grocery store, which significantly reduced the refrigeration needs of the school. Overall, the HSCF class could not have operated in its first year without the support of the researcher; however, the researcher did not influence the actual HSCF activities, as they simply followed directives from the lead HSCF teacher. This further emphasizes the need for additional HSCF support staff at the middle school for the HSCF to continue operating in the long term.

Discussion

Through naturalistic observations and semistructured interviews, this case study and resulting thematic analysis sought to explore key opportunities and barriers to integrating an HSCF food education program into schools.

Opportunities for Implementing HSCFs in Educational Settings

Similar to a school in Wagner et al.'s (2020) study where "a public secondary school noted that the use of their HSCF on campus has enabled community building and new partnerships with the local food bank, which in turn resulted in a 'buzz in enthusiasm in the school community' " (p. 226), the HSCF program in this study fostered community building and promoted enthusiasm and a commitment to sustainability within the school community through the compost program that was initiated. The involvement of Sam, the community champion, is particularly important for the HSCF program. Sam's connection with the school highlights how a supportive community champion can facilitate strong community connections and contribute to the success of food education programs. Additionally, the visibility of the farm within the community emphasizes the potential community support that can be generated if a food education program vocalizes and promotes the presence of their program in the wider community. Community members may be excited about food education initiatives (Wickham & Carbone, 2018) and could, like Sam, see it as their responsibility to support those programs. Although other studies have shown that connecting to a wider community often happens as a last step in integrating a food education program into a school (Burt et al., 2017), this research indicates that having community support initially can provide many benefits to the program and aid in its initial integration.

Administrative support also contributed to the implementation and integration of the HSCF program in the middle school. This support primarily manifested in contributing to writing the initial grant application, advocating at the school district level for paid time to run the HSCF, and promoting the HSCF within the wider community. The administration also indicated that they wanted to build a team around Mrs. Smith to help her run the HSCF, but this mission was largely unsuccessful during the 2021–22 school year. This finding is consistent with previous studies that highlight how the support of school administration is key to food-related programming success and the ability of teachers to act as effective food, and more broadly health, educators (Esdaile et al., 2024; Skovgaard et al., 2024).

Barriers to Implementing HSCFs at Educational Institutions

While finances did not appear to be a barrier at the middle school at the onset of the study due to the $250,000 CAD in initial funding, finances were in fact the largest barrier the school faced. Although the school had full financial support for five years of HSCF operations, after that time the school would be responsible for covering a minimum of $5,000 to $7,000 CAD in yearly operating costs. This resulted in the lead HSCF teacher spending most of her time trying to make the HSCF financially viable, as the funding charity did not provide the school with any advice or modeling on how to make the HSCF financially sustainable.

Given the large upfront cost of the HSCF (likely over $200,000 CAD) and the exorbitant yearly upkeep costs (at least $5,000 to $7,000 CAD annually), it is unlikely that most schools will be able to afford to purchase and run an HSCF independently. Even if a school received initial funding for the purchase of an HSCF, the yearly upkeep costs would make the HSCF financially

unviable for the school in the long run. If the primary purpose of an HSCF is for educational purposes, a school would likely be better off investing much less money in a different initiative, such as a raised garden bed or an indoor tower garden. The lack of financial transparency by the funding organization was also a concern, as it made it difficult for the school to estimate the actual operating costs of the HSCF to plan for future financial independence.

The other barriers the middle school faced, including insufficient time, resources, and staff, are common barriers to implementing food and health education programs (Bergling et al., 2022; Skovgaard et al., 2024). In terms of labor requirements specifically, when comparing this middle school's experience with Wagner et al.'s (2020) study investigating HSCFs in educational settings, one part-time employee is not sufficient to operate an HSCF, let alone attempt to use it as an educational tool. This concentrated workload on one person, or having one "teacher champion," has been shown to happen in food and health related school programming (Skovgaard et al., 2024). Although it is possible for these teacher champions to contribute to the development of well-integrated and sustainable initiatives within schools, it is critical for the responsibility to be shared among a wider group that shares a vision of the program in question. If this support system is not present, the teacher may experience burnout, which could lead to the end of the initiative. Or, if the teacher champion left the school, the program would end as there would be no one trained to take their place (Rojas et al., 2022; Skovgaard et al., 2024). In the case of the middle school in this study, there were no teachers beyond Mrs. Smith who were interested in assisting with the HSCF. Other studies have shown similar difficulties for teacher champions when trying to obtain support from other staff members. For instance, Skovgaard et al.'s (2024) study, which looked at integrating physical activity programs within schools, showed that "champions often encounter challenges, particularly when lacking active engagement and commitment from school management and colleagues" (p. 161).

This lack of interest from other teachers in contributing to the implementation of the HSCF highlights the importance of strengthening commitment to food-related learning across all subjects and teachers so that there is a broader interest in participating in these types of food-related initiatives. This could be accomplished through subject-integrated food education whereby food-related topics are included in multiple topics (Hard et al., 2024), increased focus on food-related topics within written curricular documents (Smith & de Zwart, 2017), incorporating food education into teacher education programs (Stapleton, 2022), and providing more food-related professional development opportunities for teachers (Dunn et al., 2019).

Implications

Implications for Schools and Educators

The findings of this study have several important implications for schools interested in implementing a HSCF program in their setting. First, successful implementation of a HSCF program requires substantial ongoing staff involvement, financial support, and specialized knowledge. Therefore, schools should carefully assess their existing and future labor capacity and financial resources before implementation. Reliance on a single teacher, as was the case in this study, comes with significant sustainability risks that could lead to teacher burnout or program discontinuation if there is not adequate institutional and/or community support.

Second, this study highlights the potential of HSCF programs to act as catalysts for wider community engagement in sustainability initiatives. For a school with existing community connections, a HSCF program or other well-supported initiative may serve as a driver for further community collaboration, experiential learning opportunities for students, and locally situated action at both the school and community levels.

Implications for Policy Makers and Funding Bodies

For policy makers, this study shows the importance of prioritizing food education at the district/provincial/national levels. If sustainability and informed citizenship are goals of educational systems, as they are in many instances, this goal needs to be reflected in the support and resources given to schools implementing initiatives that could contribute towards achieving this goal, such as funding opportunities that would allow a school to hire staff to operate a HSCF or lead other food-related programming.

For organizations funding school-based programming, the findings of this study underscore the importance of ensuring transparent funding models and realistic long-term cost projections to ensure the success and continued sustainability of programming.

Implications for Future Research

This study highlights the need for further research examining the feasibility of HSCFs in diverse educational settings. Studies that compare programs across geographical regions, school types, and HSCF models would allow for a clearer picture as to whether the barriers and opportunities identified in this study are widespread or context specific. Longitudinal research on HSCF programming would also be beneficial in determining whether the financial and labor demands remain stable, diminish, or intensify over time.

Recommendations

Based on this study, the following are recommendations for schools that are interested in investing in a HSCF program:

1. **Have an established and committed multi-person support team:** Schools should avoid relying on a single teacher champion and instead secure a dedicated team who are responsible for HSCF operations, curriculum integration, and community partnerships. Ideally, this team is composed of multiple actors within a school community including teachers, administrators, students, and community members. This distributed leadership structure would help ensure sustainability of the program and avoid participant burnout.
2. **Secure long-term funding prior to implementation:** Financial transparency is crucial; schools and funders should continually communicate so all parties understand initial and ongoing operating costs to ensure a long-term plan for obtaining the necessary finances to operate the HSCF.
3. **Conduct a pre-implementation feasibility and needs assessment:** An assessment that considers a school's staffing capacity, curricular alignment, site logistics, student involvement, and community interest may help determine if a HSCF is a feasible investment. Additionally, conducting a needs assessment that considers the goals of the HSCF program (e.g., educating students, feeding students) could help a school understand if a HSCF is the best option for achieving those goals.

4. **Provide professional development opportunities:** As operating a HSCF requires specialized skills and knowledge, teachers and other staff should be provided with training in hydroponic systems and relevant safety protocols. Additionally, professional development opportunities that focus on cross-curricular food related education could strengthen the educational potential of the HSCF.
5. **Leverage community partnerships:** Partnerships with local businesses, farmers, community members, and other organizations can help offset logistical challenges of operating HSCFs (such as refrigeration capacity or managing waste). Schools should map existing or potential relationships with community members early in the planning process to determine ways in which these connections could support the program.
6. **Explore lower cost or less labor-intensive alternatives when appropriate:** For schools lacking the substantial financial resources and staffing capacity necessarily for operating a HSCF, or schools that determine a HSCF is not needed to meet their programming goals, alternative growing systems (e.g., tower gardens, smaller hydroponic systems, raised garden beds) may offer similar pedagogical benefits with far lower financial and labor demands.

Study Limitations

A central limitation of this study was the small sample size of only one school. However, HSCFs in educational settings are a new phenomenon, and consequently, the total possible sample size for the study was limited. To the best of the author's knowledge, the middle school included in this study was the only non-university educational institution operating an HSCF at the time of the study. A second limitation was that the study examined only one specific model of HSCF. As several different HSCF models exist in the market, it is possible that schools would encounter different barriers and/or opportunities to implementation if an HSCF was designed differently. Finally, the COVID-19 pandemic was a limitation of this study. Due to ever-changing health orders, normal teaching and learning opportunities were disrupted many times throughout the year. This impacted the school's ability to plan and run the HSCF program as intended.

Conclusion

This study indicates that, although the implementation of an HSCF program can be supported by strong community connections and administrative support, these opportunities for successful implementation are overshadowed by significant barriers. The financial costs and labor requirements for purchasing and operating an HSCF are substantial and are likely unattainable for most schools. This study highlighted that a school would need to receive some sort of funding to initially purchase an HSCF unit and would be in a financially precarious situation following implementation if it did not have continuous external financial support to cover operating costs. The high labor requirements of the HSCF, given how this school and many others rely on teacher and community champions to run such programs, place a large burden on one or a few individuals, which could lead to burnout and program discontinuation if additional support is not provided.

Given these barriers, it is important to evaluate the suitability of HSCFs in educational settings. Depending on the goals of the school, other types of hands-on food-related learning opportunities, such as tower gardens and other indoor growing solutions, may be more appropriate and easier to implement. These units would be less intensive in terms of both financial cost and labor requirements and, consequently, would be easier for a school to initiate and have a higher potential for sustainability in the long run. Further research on implementing HSCFs in educational settings is required to confirm whether the experiences of this school are consistent across different settings. Overall, educational institutions should use caution when considering the purchase of an HSCF and ensure that they have significant school-wide support and a consistent income stream to finance operating costs before investing in an HSCF unit.

Biography

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PEER-REVIEWED PAPER

Rethinking Taste: A Didactical Model for Teaching Sustainable Food Consumption in Home Economics

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Abstract

This article examines how the concept of taste can be employed in Home Economics education to challenge normative frameworks surrounding sustainable food consumption. Drawing on theoretical perspectives that view taste as a relational and dynamic activity, we argue that taste offers a valuable lens for engaging students in critical reflection on food practices. In addition, we introduce a preliminary didactical model intended to support teachers in planning, implementing, and reflecting on their teaching. The model is based on insights from a small-scale pilot project, which also highlights certain limitations in terms of scope and generalizability. Nevertheless, the findings offer promising directions for further development and research in sustainability education.

KEYWORDS: **TEACHING TASTE, SUSTAINABLE FOOD CONSUMPTION, A TRANSACTIONAL TASTE, NORMATIVE TEACHING, PILOT STUDY**

Introduction

Sustainable development—and more specifically, sustainable food consumption—holds a prominent position in Home Economics curricula globally. The subject in compulsory school in Sweden is called Home and Consumer studies, but we have chosen to use the international term Home Economics consistently throughout this text. In Sweden, this is expressed in the National curriculum for compulsory school (National Agency for Education, 2024) where knowledge of consumer issues and domestic work is framed as essential for promoting sustainable development. As stated in the curriculum:

> Knowledge of consumer issues and work in the home gives people important tools for creating a functional everyday life and promoting sustainable development by being able to make informed choices as consumers with regard to health, finances, and the environment (National Agency for Education, 2024, p. 51).

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One of three principal goals of the subject is to provide students with the conditions necessary to develop "the ability to evaluate choices and actions that occur in a home based on how they affect health, finances, and the environment" (National Agency for Education, 2024, p. 51). This objective reflects a holistic approach to sustainability, encompassing its three core dimensions: social, economic, and environmental.

Internationally, sustainability has also been identified as a guiding principle in Home Economics education. Maguire and McCloat (2017) highlight several countries—including Malta, Japan, Finland, Sweden, and Ireland—where sustainability is embedded within a curricular framework. For instance, in Malta, sustainability is one of four main foundational principles intended to inspire students to act toward a sustainable future. In Japan, sustainability is a central theme, with "Daily consumption and the Environment" designated as a key area of learning. Maguire and McCloat (2017) further argue that "Around the world, teachers of Home Economics use a variety of active learning strategies as well as practical activities to engage students and prepare them for a sustainable and healthy future" (p. 167).

Within the field of Education for Sustainable Development (ESD), numerous scholars (Lönngren & van Poeck, 2021) have characterized the global challenges related to climate change, biodiversity loss, and resource depletion as *wicked problems*—a concept originally introduced by Rittel and Webber (1973). Wicked problems are inherently complex, lacking definitive solutions or universally agreed-upon approaches. They involve multiple stakeholders with conflicting goals. They are examined through various academic disciplines, encompassing both past and present, as well as local and global dimensions—making universally accepted solutions unattainable (Block et al., 2019; Hjälmeskog et al., 2024).

In Home Economics education, examples of wicked problems include decisions related to food choices and cooking methods. Teaching such issues is inherently complex. Consequently, there is a tendency within ESD to simplify these problems, which can result in normative teaching. This tendency has been problematized in research (e.g. Jickling & Spork, 1998; van Poeck & Östman, 2020), as it may lead to students being taught "the right way" to think and act for example, being encouraged to choose specific foods deemed sustainable or healthy.

Historically, Swedish Home Economics teachers have held a normative role. In a study on health promotion over time, Palmblad and Eriksson (1995) describe the Home Economics teacher as an extended arm of the state: "The School Kitchen seminars and Home Economics schools are said to be of great importance for public health work; here is a corps that can be used in the propagandist activities" (pp. 31–32). This normative tradition is also evident in later national curricula and textbooks from the 1960s onward, as shown by Oljans (2020) and Gelinder (2020). In a single-case study following one class during a full school year, Berg et al. (2023) present current examples of normative teaching. For instance, students emphasized the importance of food appearance in lessons, noting that their teacher "eats with her eyes" (p. 5). The teacher also spoke positively about homemade food, while prefabricated alternatives were problematized. One student commented: "You're supposed to understand that it's better to cook homemade food" (p. 6). This suggests that the historical task of guiding students toward certain values and behaviors persists, despite the current national curriculum (National Agency for Education, 2024) clearly stating that teaching should be factual and versatile. Students are expected to develop "their ability to critically examine information, facts and conditions and to recognize the consequences of different alternatives" (p. 7). While values such as

democracy, equality, and sustainability are to be conveyed, teaching should not be normative. For example, discussing how to choose food—including aspects such as eco-labels—can support students in making informed choices, but it is not the teacher's role to prescribe specific decisions (Håkansson, 2019).

In addition, research in environmental and sustainability education has shown that there is no simple connection between knowledge and behavioral change (Boeve-de Pauw et al., 2015; Kollmuss & Agyeman, 2002). Instead, aspects such as values (Bamberg, 2013) and motivation (Legault & Pelletier, 2000) play a decisive role. Simply providing information about which foods are "good" or "bad" does not significantly influence students' choices. In fact, such cognitive approaches may have limited or even counterproductive effects (Marty et al., 2018).

This suggests that Home Economics teachers, rather than relying on traditional normative approaches—as Bohm (2023) argues they often do—could explore new ways of planning and conducting lessons. One possible approach is to start from students' interest in taste during cooking. A study of Swedish Home Economics lessons shows that taste is the primary factor guiding students' choices during foodwork, even when the lesson's purpose relates to sustainable development and students are encouraged to consider health, economy, and environmental perspectives (Gelinder et al., 2020). Similarly, Bohm (2023) demonstrates that students express dissatisfaction when a focus on health compromises taste, and they question the importance of healthy choices when these conflict with personal preferences. According to Bohm, students only actively consider health when it is explicitly stated as a lesson goal. Even when students are trained to follow health recommendations, they report preferring to base their food choices on taste outside the classroom (Berg et al., 2024).

It becomes clear through the research mentioned above that taste is a content relevant to sustainability education. Not only because students themselves prioritize taste, but also because taste is generally the most influential factor in food choice (Belasco, 2008; Højlund, 2020; Schmidt & Mouritsen, 2020). Wistoft and Qvortrup (2019) offer further arguments. They have developed a didactics of taste and argue that taste should be central in Home Economics education. Based on a study of cookbooks, they argue that taste has historically been important and remains so. Taste also represents a qualitative dimension of food education and can enhance student engagement and expectations. This is supported by Christiansen (2019), who, based on an observational study in Danish schools, concludes: "It is essential for teachers to reflect didactically on how the sense of taste can be activated when teaching the subject food education" (p. 17). The relevance of taste in ESD is stated by Weiser et al. (2026) in their scoping review concerning sensory activities for children in educational settings. Food-related sensory activities are promising tools not just for nutrition education, but for cultivating holistic, sustainable learning experiences. At the same time, only a few studies in their review explicitly link sensory activities to sustainability, which indicates a research gap.

Aim and research question

This article explores how the concept of taste can be utilized in Home Economics education to challenge normative approaches to sustainable food consumption. Furthermore, we propose a preliminary didactical model intended to support teachers in the planning, implementation, and reflection of their teaching practices concerning sustainable food consumption.

Taste, More Than Just the "Taste"

Taste in relation to food, mainly refers to the sensory experience perceived in the mouth during eating. It can be both about describing and evaluating what is consumed (Mouritsen & Styrbæk, 2017). Furthermore, taste is one of the five human senses—alongside sight, smell, hearing, and touch—and it helps to distinguish the five basic tastes: sweet, salty, bitter, sour, and umami. Simply put, it is the collection of cells located within the taste buds on the tongue that enables us to perceive the basic tastes. Humans have approximately 9,000 taste buds, and each taste bud consists of around 100 renewable cells. When these cells come into contact with oral fluids, the taste dissolves. When eating, not only basic tastes are felt, but also a lot of other flavours that can be understood as aromas. Aromas are perceived with the help of the sense of smell (Mouritsen & Styrbæk, 2017). When having a cold, the experience is that the food does not taste like anything, which is because the nose is blocked and aromas of what is eaten cannot be perceived. It can easily be tested how smell and the sense of taste work together by holding the nose and, for example, putting a candy, a fruity one, in our mouth and chewing. Only the sweet taste can be identified while holding the nose. When the fingers are released experience of several flavors occurs. Furthermore, the mouth feel of the food, i.e., the texture and the heat are experienced when eating something. It is a complex interaction between our senses that leads to the total taste experience (Prim et al., 2024).

Taste plays a decisive role in food selection, as individuals tend to choose foods perceived as pleasurable, in other words, what tastes good (Belasco, 2008; Højlund, 2020; Schmidt & Mouritsen, 2020). Just as eating is a learned behavior, the appreciation of new tastes and flavors also requires learning. At birth, humans exhibit an innate preference for umami and sweet tastes—flavors that signal nutritional richness and are evolutionarily linked to survival (Schmidt & Mouritsen, 2020).

Educational approaches to taste, particularly sensory-based methods such as the Sapere technique, have demonstrated positive effects on children's consumption of fruits and vegetables (e.g., Kähkönen et al., 2018; Sepp & Höijer, 2016). These methods emphasize curiosity and sensory exploration, aiming to enhance both motivation and knowledge through experiential engagement. However, research by Leer and Wistoft (2018) highlights a reductive portrayal of taste within pedagogical contexts and a prevailing mistrust of children's own sensory preferences. Their findings suggest that taste education often seeks to guide children toward socially constructed notions of "correct" eating, thereby positioning taste as an obstacle rather than as a vital sense—a source of pleasure and a meaningful way of engaging with the world.

A different perspective is to understand taste as an activity (Teil & Hennion, 2004). Taste is then understood as an active process, an action and not something that is defined beforehand. It will be further developed in the following section using John Dewey's understanding of how meaning is created in transactions.

A transactional understanding of taste

A transactional understanding of taste builds on a pragmatist view (Teil, 2025; Teil & Hennion, 2004) and on Dewey's (1983) transactional methodology (Gelinder, 2020). In this perspective, taste gets its meaning in the *encounter* between the one who tastes and what is tasted. This interplay constitutes the transformative process that constantly takes place between people and their environment (Dewey & Bentley, 1991). Taste gets its meaning in the transaction, in the encounter.

To illustrate, imagine that you have an apple in your hand, and before you have tasted the apple for the first time, the taste of apple has no meaning. It is when you take a bite of the apple, in the encounter with the apple, that the taste is created and gets its meaning. However, next time you eat an apple, your earlier experiences will affect your expectations in the new meeting with the apple, and hence the meaning of the apple flavor. To understand what influences the experience and meaning-making of taste, Teil and Hennion (2004) use four factors: body, object, social context, and situation.

1. **Body**

   It is through our body, mouth, and how our different senses work together that we can experience taste. It matters how many times the body has previously tasted the raw material/food, that is, what our own body has previously experienced and learned. For example, the taste of a strong espresso is experienced in different ways, whether you are an experienced barista or if you have barely drunk any coffee before in your life. The body can be trained to become more competent, skilled, and sensitive to what is happening in the encounter between body and object.

2. **Object**

   The ingredient/food/dish contributes to the encounter between the object and the one who tastes. It must be understood as the raw material itself, the food or the dish, and this object also contributes to what the taste becomes in the encounter with the taster. A Parmesan cheese, for example, will contribute to different flavors depending on how long it has been stored. When the package for the Parmesan cheese has been opened and it gets old and moulds, it also affects how it tastes when eaten. The object changes, for example the temperature, and that affects the taste experience. Is the Parmesan cheese fridge cold, or has it been at room temperature for two hours before you eat it?

3. **Social context**

   The social context always influences the development of new experiences and the ability to experience taste. Do you eat Parmesan cheese in a small, intimate restaurant in Italy with your sweetheart, or do you eat the cheese alone at home in front of the TV because it was the only thing in the fridge to eat? The people around you influence and contribute to the experience and taste perceived.

4. **Situation**

   The taste is influenced by the situation and material, such as time, space, tools, rules, and different techniques. An example is that a lesson in Home Economics affects what the taste will be through various circumstances, such as the purpose of the lesson, teacher's actions, available kitchen items that the students can use when working with food, whether the students know the method of preparation, and the length of the lesson.

Teil and Hennion (2004) argue that taste is a way of forming relationships—both with objects and with people. It is not merely a property of goods, nor simply a skill possessed by individuals. What they emphasize is that taste is an activity: it is dynamic and subject to change. Four key factors can deepen our understanding of what taste truly is, and help explain why we experience taste in a particular way within a specific context.

Methodology

The present study builds upon a pilot project designed to examine the educational potential of taste—particularly from a transactional perspective—as a central component in teaching sustainable food consumption. The pilot project, which engaged a small group of educators and researchers, was originally conceived as a preparatory step toward securing funding for a more extensive research endeavor. However, the pilot project itself yielded valuable insights and experiential knowledge that have proven instrumental in informing and advancing the didactic framework of Home Economics. The findings underscore the relevance of taste as a dynamic and educable construct, capable of fostering student engagement, shaping food preferences, and promoting sustainable consumption behaviors within educational settings.

The Idea of the Pilot Project

Promoting sustainable food consumption through education requires more than the transmission of factual knowledge—it necessitates experiential learning that engages students' senses, values, and habits. This pilot project was designed to investigate how *a transactional perspective on taste* can inform practices in Home Economics, fostering sustainable food choices among students. Central to this approach is the understanding that taste is not merely a biological or static preference, but a dynamic construct shaped within social, cultural, and educational interactions. By encouraging students to *experience unfamiliar ingredients*, *learn how to prepare them in appealing ways*, and *develop new taste preferences*, educators can cultivate curiosity and intrinsic motivation to explore sustainable food options.

Material

Three Home Economics teachers working in secondary education, along with three educational researchers, participated in a collaborative project. The teachers were responsible for teaching Home Economics to students in grade 6 (age 12–13) and grades 8 and 9 (15–16 years of age). The group convened on four occasions—once each month—from February to May 2021. Each meeting took place in a Home Economics education classroom, and lasted between two and three hours. Before the first meeting with the teachers, the researchers developed preliminary plans regarding the content and the structure of the project. Decisions were made about the focus of the initial session and the necessary preparations. Selected literature was provided to the teachers to serve as both inspiration and a foundation for discussion. In addition, the researchers prepared drafts of a reflection protocol for teachers to use after implementing classroom tasks, a model or reflection tool titled “What will be the taste” and a student activity referred to as “A food memory”.

To document the process, both in terms of teacher reflections and lesson implementation, a variety of methods were employed. During the joint meetings, the researchers took field notes, which were later compared and synthesized. The teachers contributed written reflections and reports based on their classroom experiences, describing how they applied the ideas discussed during the meetings. These reflections included commentary on lesson execution, their own teaching practices, and student responses and feedback.

Ethical Considerations

Although the scope pilot project is limited, ethical research practices were carefully observed. The three participating teachers were fully informed about the purpose of the study and were asked to provide their consent. They were also made aware that they could withdraw from the project at any time without facing any consequences. In accordance with established ethical guidelines (Swedish Research Council, 2024), a clear division of responsibilities was maintained throughout the project. The teachers agreed to participate in four meetings held outside of regular working hours and committed to reading selected texts. It was explicitly stated that they could explore and test ideas in their own teaching, provided that this did not result in an increased workload. As a result, students were only indirectly involved in the project, participating solely through their regular classroom activities. Their involvement was mediated through the teachers' reflections, which included accounts of teaching experiences, student activities, and observed reactions.

Summary of the Four Collaborative Meetings

At meeting number 1, the study, the background, and the purpose were introduced. Researchers presented a transactional understanding of taste and explained the Sapere method, which emphasizes sensory education. Participants engaged in basic sensory exercises, including tasting colored vanilla yoghurt (pink, blue, green, and white) to explore how visual cues influence perceived taste. A discussion followed on the interplay of the senses, particularly the role of sight in shaping taste experiences.

Another exercise involved tasting water solutions to identify the five basic tastes (sweet, sour, bitter, salty, umami), culminating in the creation of "The world's best sandwich", a dish designed to incorporate all five tastes. Vocabulary related to taste was discussed, along with strategies for teaching students to balance flavors. For the next meeting, teachers were asked to read about the transactional perspective on taste in Gelinder's (2020) thesis and a shorter text about value-conflicts in relation to food choices (Höglund, 2020). Teachers were also tasked with implementing the sensory exercises in their own classrooms and documenting their experiences using a reflection protocol.

Meeting number 2, focused on teachers' reflections from their classroom implementations. This was followed by testing a testing session with various peas and beans, examining their taste, texture, smell, appearance, and pedagogical potential as sustainable ingredients. Participants prepared a shared meal using these legumes and discussed how they could be integrated into Home Economics teaching. The preread texts were revisited, with discussions centered on their relevance to education for sustainable food consumption and taste. The group also began creating a lesson plan for future classroom use, based on the insights gained.

During meeting number 3, participants prepared several recipes featuring peas and beans, including pasta bolognese, bean patties, pea hummus, and brownies. The dishes were tasted and evaluated for their suitability in student-centered lessons. It was agreed that the teachers would conduct a lesson in which students prepared meals using beans, peas, or lentils as sustainable alternatives to meat. Teachers were also asked to implement the task "A food memory" and integrate it into the "What determines the taste" reflection model.

At meeting number 4, the last meeting was dedicated to summarizing and evaluating the pilot project. Teachers shared their experiences and insights, reflecting on both the practical and pedagogical aspects of the project. A key topic of discussion was the type of knowledge and competencies Home Economics teachers need to effectively teach about taste—particularly as a dynamic and context-dependent phenomenon, in line with a transactional perspective.

Findings—Experiences of Teaching Taste

The participating teachers expressed that the project was both engaging and enriching. Their involvement provided them with new perspectives, enhanced knowledge, and inspiration for future lesson planning. They were particularly struck by the students' narratives when sharing food-related memories and deeply appreciated the students' high level of engagement. The project was also perceived as a form of professional development, offering an opportunity to deepen their understanding of how to teach sustainable food consumption.

In summary, the teachers reported that students responded positively to the tasks, describing them as enjoyable and stimulating. The students actively participated in discussions and explored their sensory perceptions. The activities titled "Basic tastes" and "Colored yogurt" were considered by the teachers to be quick, easy to implement, and well-suited to the students' abilities and previous experiences.

Discussions within the project group revealed a need to support students in articulating and conceptualizing taste and texture. This was seen as essential to ensuring that sustainable food consumption is not perceived merely as a sacrifice of pleasurable taste. In response, a prototype model—"What determines the taste"—was developed, grounded in a transactional understanding of taste. Teachers applied this model by asking students to describe a food memory, which led to nuanced classroom conversation. Students reflected on factors such as location, social context, and atmosphere, particularly in relation to cooking with legumes like peas and beans. Teachers noted that, for some students, the assignment sparked interest in unfamiliar ingredients and new culinary possibilities. Overall, the transactional approach to taste successfully broadened classroom discussions and fostered student curiosity.

Despite the positive outcomes, several challenges were noted by the teachers. First, they expressed it challenging to connect individual taste-related activities to broader themes, such as sustainable food consumption. They questioned how to make these connections explicit and meaningful for students. Secondly, the teachers expressed uncertainty about how to address and manage differing value-conflicts when teaching about food. Thirdly, there was a growing awareness among teachers of the risk of adopting a normative stance in their teaching. They sought strategies to maintain a pluralistic approach (inclusive approach). To address these challenges, teachers requested support in the form of structured lesson plans that could help them integrate taste education with sustainability themes, manage value-based discussions, and avoid normative teaching practices.

A Didactical Model for Teaching Sustainable Food Consumption in Home Economics

The teachers involved in the pilot project identified several challenges: 1. contextual integration, 2. navigating value conflicts and 3. avoiding normativity. In response to these concerns and aspirations, a didactical model comprising five strategies for integrating taste education in Home Economics was developed. These ideas were initially discussed with the participating teachers and have since been further refined to better align with classroom realities and curricular goals.

1. Developing taste awareness and conceptualization

To cultivate culinary competence, students must first acquire a foundational understanding of the five basic tastes—sweet, sour, salty, bitter, and umami—and how these interact to create balanced and nuanced dishes. This foundational knowledge not only supports technical skill development but also facilitates personal taste awareness. Through sensory exercises such as "Colored yogurt" and "Identifying basic tastes," students begin to articulate their preferences and reflect on their taste experiences. The *Sapere method* offers a valuable pedagogical framework, encouraging multisensory exploration and verbalization, thereby fostering the ability to conceptualize and communicate individual taste profiles.

2. Recognizing taste as changeable

Taste should not be understood as something fixed and static, but rather as something changeable. Drawing on Teil and Hennion's (2004) proposed model, educators can guide students to consider how taste is shaped by four interrelated factors: the body, the object (food), the social context, and the situation. Activities such as "A food memory," enable students to analyze how these factors influence their taste experiences. Furthermore, experimental cooking tasks—such as varying raw materials or cooking methods—highlight how taste evolves through repetition, prior exposure, and environmental influences. This approach encourages students to adopt a more fluid and reflective understanding of taste.

3. Exploring food-ethical values

Food choices inherently involve ethical considerations and value conflicts among stakeholders, including consumers, producers, animals, and the environment (Höglund, 2020). While pleasant taste often dominates consumer decision-making, reflective practice can reveal competing values such as animal welfare, environmental sustainability, fair labor conditions, and health. Educators can facilitate this ethical inquiry by introducing tools such as value hierarchies or value ladders, prompting students to identify and rank relevant values. When values conflict or hold equal weight, ethical dilemmas arise. In such cases, students can engage with ethical theories—such as deontology, consequentialism, care ethics, and virtue ethics—to navigate complex decision-making. Guiding questions may include:

- What obligations do I have toward myself, others, and animals?
- What kind of food consumer do I aspire to be?
- Whom or what do I wish to show care for in my food choices?
- What are the short- and long-term consequences of my choices, and for whom?
- Experimenting with taste to influence food habits

A broadened and reflective understanding of taste can serve as a catalyst for evolving food preferences and habits. To support this transformation, educators must create opportunities for students to engage with both familiar and unfamiliar ingredients through repeated exposure and experimentation. Emphasis may be placed on plant-based foods, aligning with recommendations from the Eat-Lancet Commission and national dietary guidelines. Experimental tasks—such as preparing tasting menus with varied cooking methods (e.g. roasted vs. steamed carrots) or comparing pasta sauces made with different

protein sources (e.g. lentils, vegetables, soy, meat)—can foster curiosity and motivation. Students are encouraged to assess dishes in terms of taste, texture, aroma, and sustainability across economic, social, and ecological dimensions.

4. Reflecting on taste experiences preferences

The final step involves sustained self-reflection on taste development and its implications for food choices. Students are invited to consider how their preferences have evolved, whether these changes have influenced their consumption patterns, and how they envision their future food choices. This reflective process can be supported through the use of a "Taste diary," which serves as a tool for documenting sensory experiences, tracking changes, and visualizing personal growth. Reflection is not confined to this final stage but is interwoven throughout the entire model, reinforcing the importance of introspection in shaping ethical and sustainable eating practices.

Discussion

When teaching sustainable food consumption, the aim is to create knowledge about possibilities for action, a desire and willingness to participate in sustainability work, and to create preparedness, so that the students can feel that they have the opportunity to influence and act for change (e.g. Almers, 2009; Caiman & Lundegård, 2014; Jensen & Schnack, 2006).

In this article, we show that one fruitful way to teach sustainable food consumption is to use the pursuit of food that tastes good and food enjoyment as a positive force rather than a problem (cf. Christiansen, 2019; Wistoft & Qvortrup, 2019). This includes the development of students' familiarity with taste, and with different foods, without there being a conclusion, a "right" (or "wrong") way to experience food. By focusing on taste, the students are met where they are, the teaching can be built on the students' own perspectives and questions (Sporre & Osbeck, 2022), and they get the opportunity to explore possible paths towards sustainable food choices themselves. Normativity is avoided by not valuing the students' opinions and thoughts. The overall aim of sustainable food consumption becomes visible for the students by experimenting with food items in accordance with recommendations for better health and sustainable development (EAT-Lancet, national and international recommendations, e.g. Blomhoff et al., 2023). Students should also be given the opportunity to discuss complex sustainability problems, i.e. wicked problems (Block et al., 2019), that do not have given solutions and answers, and where conflicting voices or ethical values are confirmed and allowed to be expressed (Gelinder, 2024). The focus also needs to be on conceptualizing taste and the positive aspects of food, to arouse interest and desire to try new foods and flavors, as an important part of the work with sustainable food consumption.

Recent research underscores the educational potential of sensory food education in fostering sustainable food consumption among students. The didactical model developed in this study responds to teachers' expressed need for concrete lesson planning tools and integrates five strategies that emphasize taste education, ethical reflection, and experiential learning. This model is situated within a growing body of literature that highlights the value of sensory engagement in Home Economics. Notably, Weiser et al. (2026) demonstrate how sensory activities can promote healthy eating habits and support the development of competencies such as empathy, self-awareness, and critical thinking. Similarly, Bohm (2025) emphasizes the importance of sensory reflection and autonomous decision-making in the development of cooking literacy. Together, these studies provide a theoretical foundation for the model and validate its relevance in contemporary educational contexts.

In light of recent findings, the proposed didactical model offers a holistic and practice-oriented framework for teaching sustainable food consumption in Home Economics. By integrating taste exploration, ethical inquiry, and reflective practice, the model addresses both curricular goals and broader sustainability competencies. The alignment with Weiser et al. (2026) and Bohm (2025) further reinforces its educational legitimacy. A transactional approach to taste can extend beyond taste acceptance to encompass critical thinking, ethical reasoning, and personal growth. As such, this model contributes to the evolving discourse on sustainability education and provides educators with actionable strategies to engage students in meaningful and transformative learning experiences.

Conclusions and Implications

This study shows that a transactional view on taste, is useful when teaching sustainable food consumption in Home Economics. It helps the teacher to keep the sustainability problems "wicked", not looking for simple right or wrongs, instead highlighting value-conflicts and supporting students to make independent and informed food choices. The study also contributes with a didactical model that not only gives the teachers tools to avoid normativity. It also integrates emotional, social, and ethical dimensions of taste and food consumption and thus offers a more holistic and reflexive approach to sustainable food consumption.

In this article, we present a limited study with just three teachers testing some teaching elements with their students. The study indicates that using a transactional taste and a more experimental approach could arouse students' interest, help them to conceptualize their own taste, and broaden their understanding of taste, as well as arouse an interest in unfamiliar food items. But there is a need for further research on teaching transactional taste and on the use of more experimental teaching methods in Home Economics. Furthermore, the didactical model needs to be further tested, evaluated, and investigated.

Biographies

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PEER-REVIEWED PAPER

Integrating Home Economics Education with STEAM: Thematic Review

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Abstract

Home Economics (HE) education provides a unique platform for connecting everyday life skills with academic and technological disciplines, fostering students' ability to apply knowledge in practical, real-world contexts. This interdisciplinary foundation supports the integration of HE and STEAM (Science, Technology, Engineering, Arts, and Mathematics) education in pedagogically meaningful ways, as both emphasise experiential learning, critical thinking, and creative problem-solving.

This review explores how HE and STEAM are defined and conceptualised in integrated educational practices. Two research questions were addressed in this study: 1) How interdisciplinary learning is supported through pedagogical approaches that blend scientific, technological, artistic, and life-based skills? 2) What are the key benefits of this integration?

The paper analyses research from the last ten years (2015–2025) to highlight the potential of integrating HE with STEAM to support meaningful, life-oriented learning across diverse educational settings.

Our analysis reveals that HE has continually adapted to societal change, evolving into an inherently interdisciplinary field that aligns with STEAM principles. The findings highlight strong conceptual and pedagogical connections between HE and STEAM, particularly in fostering problem-solving skills, creativity, and the real-world application of knowledge. These insights suggest that integrating the two fields can enhance future-oriented education by supporting innovative teaching practices and strengthening learners' life skills. Although the articles analysed are not focused on STEAM content from a similar perspective, the analysis still shows that the findings highlight strong conceptual and pedagogical connections between HE and STEAM, particularly in fostering problem-solving skills, creativity, and the real-world application of knowledge.

KEYWORDS: **STEAM EDUCATION, HE, HOME ECONOMICS, INTEGRATION, PEDAGOGICAL PRACTICES**

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Introduction

HE (Home Economics) has a complex and multifaceted history as a knowledge and educational practice field. Emerging in the late nineteenth and early twentieth centuries, it was initially conceived to formalise and elevate the domestic skills traditionally associated with women, such as cooking, nutrition, textiles, and household management (Andreasen & Rasmussen, 2022). Although from its very beginnings, HE pioneer Ellen Richards integrated everyday practical content with science, elucidating connections to both physics and chemistry (Soudan et al., 2021), as a subject, HE is often narrowly defined by its focus on the transmission of specific domestic skills. Over time, HE has evolved, both in its content and its societal role, reflecting broader changes in gender roles, educational philosophy, and societal needs (McCloat & Caraher, 2019). Also, the interdisciplinary links between HE and various scientific fields are increasingly recognised and more clearly articulated. Notably, the field's inherently interdisciplinary nature has positioned HE as a precursor and partner to contemporary STEAM (Science, Technology, Engineering, Arts, and Mathematics) education.

STEAM and HE share a focus on practical application, critical thinking, and preparing individuals to manage everyday challenges in personal, family, and community life. Moreover, both fields value hands-on, experiential learning, making HE a powerful and relevant context for enacting STEAM education, especially when aiming to engage learners in meaningful, life-based inquiry (Paas et al., 2025).

This manuscript explores the intersection of HE and STEAM Education by reviewing recent studies on how these two fields are defined, conceptualised, and integrated in educational practice. The focus is on understanding how this integration supports interdisciplinary learning, particularly through pedagogical approaches that blend scientific, technological, artistic, and practical life skills. Additionally, the review examines the benefits, challenges, and barriers encountered in merging HE with STEAM, highlighting implications for curriculum development and teaching strategies in diverse educational settings.

The literature review is essential because it provides a structured and evidence-based foundation for understanding how HE and STEAM have been connected and interpreted across the last decade. Using a thematic review allowed us to synthesise diverse research, identify recurring patterns, and reveal meaningful interdisciplinary links that are not visible in single studies. This ensures that the paper builds on the most current knowledge and offers readers a reliable, well-organised overview of developments shaping both fields. For readers—researchers, teachers, policymakers, and curriculum developers—it provides a structured overview of how STEAM and HE have been conceptualised, connected, and implemented in recent scholarship. By mapping the state of the field, the review equips the readership with an evidence-based understanding that can inform future research, guide pedagogical decisions, and support the effective integration and implementation of STEAM and HE across educational contexts.

Definition of STEM

The acronym "STEM" is defined according to four disciplines (Science, Technology, Engineering, and Mathematics), but understanding what STEM means in practice is more nuanced and debated. The STEM acronym originated in the early 1990s in the United States, specifically within the National Science Foundation (NSF). STEM emerged largely from economic and

geopolitical necessity, with the dual goals of advancing scientific literacy and fostering technological innovation. The National Research Council's committee (2014) found evidence suggesting that combining the STEM fields can enhance student learning motivation. Kelley and Knowles (2016) note that integrating science, technology, engineering, and mathematics within education systems often aligns with broader policy goals to sustain innovation, workforce readiness, and international competitiveness. This alignment reflects a shift in educational priorities toward addressing urgent global issues through a skills-based, interdisciplinary approach. Sam Mejias and his colleagues (Mejias et al., 2021) emphasised the development of the acronym, likely contributing to efforts to unify the four disciplines into one content domain. STEM education is a multidisciplinary approach that integrates science, technology, engineering, and mathematics, promotes essential 21st-century skills, and encompasses formal and informal learning across all levels of education (Hebebci & Usta, 2022). Although STEM initiatives might have included design elements, it became increasingly clear that a deeper, more intentional integration of artistic and human-centred perspectives was necessary. This shift marked the evolution toward STEAM, where the arts are not merely added for enrichment, but play a critical role in shaping the purpose, impact, and meaning of STEM-based work (DOSE, 2023).

The Shift From STEM to STEAM

STEM (Science, Technology, Engineering, Mathematics) focuses on technical knowledge and problem-solving, but many real-world challenges also require creative thinking, empathy, and cultural understanding. Adding the Arts (the "A" in STEAM) acknowledges that innovation is not just technical—it is also emotional, aesthetic, and social (Sanz-Camarero et al., 2023).

Incorporating the arts into STEM helps to broaden the appeal of these traditionally technical subjects (Colucci-Gray et al., 2019). Students who may feel disconnected from or intimidated by abstract scientific or mathematical content often find the arts' creative, expressive, and human-centred aspects more accessible (Danielson et al., 2022). When artistic disciplines—such as visual design, music, storytelling, or drama—are used to explore STEM concepts, learners can engage with content through different modes of learning and systems thinking (Grace et al., 2021). This diversifies how students access and experience knowledge, offering alternative ways to participate and succeed.

Today's professional landscape increasingly values 21st-century skills that combine technical expertise with creativity, innovation, and communication. Fields such as architecture, product design, urban development, environmental sustainability, and interactive media require professionals who can think critically, solve real-life problems systematically, and design functional and user-centred solutions (Razi & Zhou, 2022). These roles demand the precision of science and engineering and the creativity and empathy rooted in the arts. STEAM education acknowledges and prepares students for this reality by promoting interdisciplinary learning that mirrors how challenges are approached in the real world (Bertrand & Namukasa, 2020). In this way, STEAM better aligns with the skill sets needed in 21st-century careers than STEM, which tends to emphasise technical knowledge in isolation.

Previous studies (Sanz-Camarero et al., 2023) suggest that integrated STEAM education offers a more comprehensive and well-rounded approach than the earlier STEM model. STEAM also fosters creativity and innovation by combining the complementary ways of thinking in the arts and sciences (Colucci-Gray et al., 2019).

Opening the Acronym: The Key Disciplines

Understanding what each STEAM subject brings helps clarify how they work independently and interdependently. According to Sanders (2009), STE(A)M is an ambiguous acronym, particularly highlighting the confusion around what "T" and "E" actually mean and how they are interpreted differently by various educators and professionals. He highlights that different groups, like technology educators, see Engineering as naturally aligned with their field. However, career and technical education (CTE) professionals also claim to be in engineering because many programs involve applied engineering skills (e.g., robotics, automotive systems, construction). This overlap leads to no clear consensus or definition of Engineering or Technology in a STE(A)M education context.

In the following, we will clarify what lies behind the STEAM acronym and what is essentially meant by these subjects.

Science in STEAM

Science refers to the structured natural and physical world exploration through careful observation, hands-on experiments, and logical analysis. It encourages students to ask meaningful questions, investigate phenomena, and use evidence to conclude. Through subjects like biology, chemistry, physics, and earth science, learners build critical thinking and inquiry skills that help them understand how the world works (McGregor, 2019).

Technology in STEAM

The "T" is often misunderstood as only computing or digital technologies. In reality, the technology context is broader—it includes design, systems, processes, tools, and more, created to solve problems and meet human needs. Education includes digital devices, coding and understanding how technology affects individuals, society, and the environment. It emphasises design thinking, innovation, and the responsible use of tools in everyday life (Sivaraj et al., 2019)

Engineering in STEAM

Engineering is the application of scientific and mathematical principles to design, build, and improve structures, systems, and processes. It involves problem-solving, embracing creativity (Connor et al., 2015), and the iterative design process—identifying problems, imagining solutions, prototyping, testing, and refining (Wahyuningsih et al., 2020). Engineering teaches learners how to apply knowledge to practical challenges.

Arts in STEAM

In the STEAM context, the "A" can include humanities (visual arts, film, theatre), physical arts (sculpture, musical performance), and social sciences (history, philosophy, politics) (McGregor, 2019; Yakman, 2017). Integrating the arts into STEM strengthens students' abilities to communicate clearly and think critically while encouraging them to see issues from a broader, global viewpoint (Bertrand & Namukasa, 2020).

Math in STEAM

Mathematics is the study of numbers, patterns, shapes, and relationships. It provides tools for reasoning, calculating, measuring, and modelling the world. Math supports logical thinking and problem-solving, and it is foundational to understanding patterns and structures across all other STEAM disciplines (Belbase et al., 2021).

STEAM Education Concept

STEAM is not just a temporary trend but a growing field in curriculum development and educational research with lasting significance (McGregor, 2019; Perales & Aróstegui, 2024). Furthermore, STEAM education can be implemented in schools and higher education to help transform the educational system and address the demands of the 21st century and beyond (Belbase et al., 2021).

On one hand, STEAM holds great potential by promoting diverse ways of understanding and creating more equitable learning opportunities. On the other hand, its application in theory, teaching methods, and practice can sometimes be unclear or used inconsistently, leading to mixed outcomes (Mejias et al., 2021)

STEAM education does not just teach these subjects (Science, Technology, Engineering, Arts, and Mathematics) side by side—it integrates them to help learners see connections and apply their knowledge in meaningful, real-world contexts (Connor et al., 2015). By combining science, technology, engineering, arts, and math creatively and practically, STEAM education helps develop 21st-century skills (work in teams, communicate clearly, think critically and solve problems, be creative and adaptable) (Haesen, 2019; Li, 2024).

STEAM education is about more than interdisciplinary teaching—it is a philosophical shift. It challenges the fragmentation of knowledge by encouraging learners to see connections between fields, question assumptions, and engage with complexity. In doing so, the STEAM movement positions education as a transformative force, not only to develop skills for the workforce but to cultivate deeper understanding, critical thinking life skills, and sustainability-minded citizens (Colucci-Gray et al., 2019).

The Emergence of HE: Social and Educational Contexts

This section explores the beginnings of HE education, its social and educational significance, and its enduring and evolving connections to STEAM.

The development of HE as a formal field of study was deeply intertwined with the social, economic, and political transformations of the nineteenth and early twentieth centuries. In the United States, researcher Ellen Richards (1842–1911) is widely known for applying scientific methods (e.g., chemistry applied to food and sanitation) to domestic tasks, helping turn everyday household work into a recognised discipline of “domestic science” and later HE (Philippy, 2021, p. 379). For example, her movement framed HE as “the science of consumption” and connected household environments with broader social conditions and economic notions of rational consumption (Philippy, 2021, p. 392). While, in Denmark, the period from 1890 to 1940 was particularly significant for the institutionalisation of HE education (Andreasen & Rasmussen, 2022). Prior to this, women’s education was largely informal, with domestic skills passed down through generations without the recognition or status afforded to male-dominated fields such as agriculture or trade.

The rise of HE was propelled by several factors. The transition to democratic forms of government, the expansion of the welfare state, and the increasing importance of health and nutrition in public policy all contributed to the recognition of domestic knowledge as essential for societal well-being (Hernes, 1987; Rogers, 2006). In Nordic countries, for example, in Denmark and Finland, the establishment of schools of HE provided new educational

opportunities for women, who had previously been excluded from most forms of secondary and higher education (Andreasen & Rasmussen, 2022; Broberg et al., 2021). Similarly, in Estonia, the first HE schools can be regarded as the first schools providing vocational education for girls (Taar, 2015).

Similarly, in Ireland, HE (initially termed "domestic subjects") became part of the primary and postprimary curriculum in the nineteenth century, with the explicit aim of enhancing the quality of life for families and equipping young women with practical skills for everyday life (McCloat & Caraher, 2019). The subject evolved from cookery and needlework to a broader curriculum encompassing nutrition, health, and home management, reflecting changing societal expectations and the growing recognition of the importance of these skills for both individual and public health (McCloat & Caraher, 2019). In the same way, the value of the subject has changed in many countries. As an example, in Latvia, HE has evolved from a narrow, practical discipline into one that supports holistic student development and awareness of quality of life (Dislere et al., 2020).

In non-Western contexts, scholarship shows the global reach of HE. For example, in Japan, the subject of *kateika kyōiku* (HE Education) emerged in the Meiji period as part of the ideology of "good wife, wise mother" (*ryōsai kenbo*) and later post-WWII reforms made HE compulsory for both girls and boys, thereby repositioning it in a democratic, gender-equal frame (Field, 2016, p. 3). In Slovenia, more recent research emphasises how HE education has adapted to cultural and social change, and how its curricula reflect societal shifts (Erjavšek, 2021).

The Multidisciplinary Nature of HE: Foundations for STEAM

An interdisciplinary approach is central to HE as a field of study and educational philosophy (McGregor, 2019). As the International Federation for HE (IFHE) notes, HE education aims to address real-world, practical problems through an interdisciplinary and transdisciplinary approach, equipping students with the knowledge, skills, attitudes, and values necessary for sustainable and healthy living (IFHE, 2008; Magee et al., 2010). This already sets the tone for the education to be interdisciplinary.

With an early background strongly based on natural science, the connections between HE and STEAM are historical and ongoing. In the early twentieth century, the scientific study of nutrition, hygiene, and household management brought the methods and content of science and mathematics into the domestic sphere. For example, teaching nutrition required an understanding of biology and chemistry, while budgeting and resource management drew on mathematical skills (Andreasen & Rasmussen, 2022; McCloat & Caraher, 2019).

Yet the curriculum for HE education has traditionally included topics such as nutrition (science), food preparation and preservation (technology), textiles and clothing construction (engineering and arts), household budgeting (mathematics), and interior design (arts and technology) (Erjavšek, 2021; IFHE, 2008), in several countries, contemporary curricula have both deepened and widened the connections between HE education and STEAM. HE education now often includes modules on food science, environmental sustainability, consumer technology, and design thinking, areas that directly intersect with STEAM disciplines (Erjavšek, 2021). In Slovenia, for instance, the HE curriculum encompasses healthy lifestyle, nutrition, textiles, economics, and sustainable development, all of which require the integration of scientific, technological, and mathematical knowledge (Erjavšek, 2021).

Moreover, the pedagogical approaches of HE, such as project-based learning, critical thinking, and reflective practice, all mirror those advocated in STEAM education. Both fields emphasise the application of knowledge to solve practical, real-world problems, fostering creativity, innovation, and lifelong learning (McCloat & Caraher, 2019).

Method

We applied thematic review to analyse published articles by identifying, organising, and interpreting recurring themes across sources. It helped to make sense of complex information and highlight meaningful connections between disciplines like HE and STEAM. Thematic review included six steps (Naeem et al., 2023): (1) defining the purpose and research questions; (2) planning the literature search; (3) searching and collecting sources; (4) organising the literature; (5) evaluating the literature; (6) interpreting the results. Among the databases available to the authors, EBSCO, Web of Science, JSTOR, Scopus, and Google Scholar were selected for this review's literature search because of their strong academic credibility and broad disciplinary coverage”

These databases offered a balanced combination of depth, relevance, and efficiency for identifying key sources aligned with the review’s objectives. These searches aimed to identify all relevant national and international published works in full-text format. To ensure accessibility and consistency, the search was limited to English-language journals that could be accessed through the selected databases.

The main terms included in the search were: ‘STEAM/STEM in home economics’, ‘family and consumer sciences (FCS) in STEAM’, ‘food and nutrition integration with STEAM/STEM’, ‘home science education’, ‘science of cooking´, ‘digital tools in home economics’, ‘home economics literacy’, ´home economics and technologies´, ‘HE and ICT (Information and Communication Technology)’, ‘Food in science education´, ‘Food in STEAM’, ‘Math in home economics´, ‘Art in home economics /cooking’, technology in home economics´, ‘AI in home economics´. The paper analyses research from the last ten years (2015–2025) to ensure that the analysis reflects the most up-to-date research and educational developments.

Figure 1 shows the criteria for thematic analysis. An initial search across academic databases returned a total of 65 papers. A clear set of inclusion and exclusion criteria was applied to ensure the relevance and coherence of the review. Articles were included only if they directly referenced HE or its recognised equivalents, such as Family and Consumer Sciences, Food Technology, or similar terms. These terms had to appear explicitly in the text to ensure that the article substantively engaged with the discipline. Articles that were duplicate entries, inaccessible, or that only mentioned HE indirectly, without engaging with the core subject matter, were excluded.

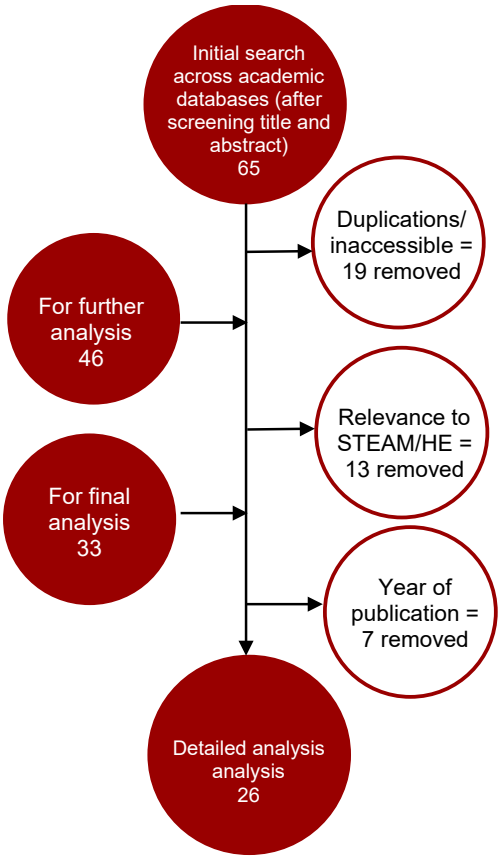

Figure 1 Thematic review criteria

The remaining papers were systematically categorised based on year of publication and their relevance to the STEAM framework and HE Education. Following this, to classify each article within STEAM, a coding system was developed whereby articles with a primary focus on science were coded as 'S'; those related to technology were coded as 'T'; articles discussing aspects of engineering were marked as 'E'; those involving the arts were coded as 'A'; and finally, articles addressing mathematics were coded as 'M'. Each article was reviewed individually to determine which domain or combination of domains it addressed, and the appropriate STEAM codes were applied.

This categorisation enabled the identification of disciplinary emphases and intersections within the literature. Therefore, from the initial 46 eligible articles, 26 were selected for in-depth analysis based on the strength and clarity of their relevance to both HE and the STEAM components. Table 1 illustrates the screening and selection process.

Table 1 Connections between STEAM and HE. Articles listed

Nr	Article	Areas of STEAM relevant to the article					Key Themes that emerge per article						
		S	T	E	A	M	Inter-disciplinary Learning	Problem solving & Critical Thinking	Creativity & Design Thinking	Real-World Application & Life Skills	Collaboration & Team Work	Technology Integration	Innovation & Future Skills
1	Arroz, M. D. (2024).		✓		✓		✓			✓		✓	
2	Baiden, P., Essel, H. B., Vlachopoulos, D., Tachie Menson, A., & Essuman, M. A. (2021).		✓		✓			✓	✓		✓	✓	
3	Belbase, S., Mainali, B. R., Kasemsukpipat, W., Tairab, H., Gochoo, M., & Jarrah, A. (2021).	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
4	Dauvarte, L. (2015).		✓					✓	✓	✓		✓	✓
5	Dislere, V., Pridane, A., Vronska, N., & Lice-Zikmane, I. (2020).		✓				✓	✓	✓	✓		✓	✓
6	Ejinkeonye, U. B., & Usoroh, C. I. (2016).		✓				✓	✓		✓		✓	
7	Erjavšek, M., Lovšin Kozina, F., & Kostanjevec, S. (2020).	✓	✓				✓	✓		✓			
8	Fooladi, E. C., Tuomisto, M., & Haapaniemi, J. (2023).	✓					✓	✓	✓	✓			
9	Gard, M., & Enright, E. (2016).	✓	✓									✓	
10	Jamaluddin, R., Mohd Shah, N. H., Mohd Puad, M. H., Mohd Sufian Kang, E. K., & Jusoh, R. (2023).	✓	✓	✓		✓		✓	✓				✓
11	Lim, M., Abell, A., Szocs, C., & Biswas, D. (2024).					✓	✓	✓					
12	McGregor, S. L. T. (2019).	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓
13	Mejias, S., Thompson, N., Sedas, R. M., Rosin, M., Soep, E., Peppler, K., Roche, J., Wong, J., Hurley, M., Bell, P., & Bevan, B. (2021).	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓
14	Merrill, C. A., & Lawver, R. G. (2019).	✓	✓	✓		✓		✓		✓			
15	Morris, B. J., Zentall, S. R., Murray, G. W., & Owens, W. (2021).	✓	✓	✓		✓	✓			✓	✓		

Nr	Article	Areas of STEAM relevant to the article					Key Themes that emerge per article						
		S	T	E	A	M	Inter-disciplinary Learning	Problem solving & Critical Thinking	Creativity & Design Thinking	Real-World Application & Life Skills	Collaboration & Team Work	Technology Integration	Innovation & Future Skills
16	Oluwagbemileke, F. B. (2024).		✓					✓	✓		✓	✓	
17	Pendergast, D., Deagon, J., Du Plessis, A., McManus, S., & Blayney, B. (2022).	✓	✓				✓			✓			✓
18	Pridāne, A. (2017).	✓	✓		✓	✓			✓	✓		✓	✓
19	Saratapan, N., Pitiporntapin, S., & Hines, L. M. (2019).	✓	✓	✓		✓		✓	✓			✓	✓
20	Saroukh, S. A. K. (2024).		✓	✓	✓		✓	✓	✓	✓		✓	
21	Sundqvist, K., Korhonen, J., & Eklund, G. (2021).		✓				✓	✓				✓	
22	Surgenor, D., McMahon-Beattie, U. S. M., Burns, A., & Hollywood, L. E. (2016).	✓	✓		✓			✓	✓			✓	
23	Taar, J., & Palojoki, P. (2022).		✓				✓	✓			✓		✓
24	Umeh-Idika, A. S. (2023).		✓					✓				✓	✓
25	Vartiainen, H., & Tedre, M. (2023).		✓		✓			✓	✓	✓		✓	✓
26	Veeber, E., Taar, J., Paas, K., & Lind, E. (2017).		✓		✓		✓	✓	✓	✓		✓	

Main Findings: Practices of Integrating STEAM and HE Education

According to the thematic analysis, STEAM aligns naturally with HE, where practical, creative, and ethical knowledge intersects (e.g., sustainability, food systems, family life).

Science

Firstly, delving into practices from a health perspective, including food and nutrition. HE activities in this strand are anchored in scientific principles, especially biology, chemistry, and health sciences. For example, students engage with the biochemistry of nutrients, study metabolic processes, and learn about the effects of different diets on physiology, supporting a strong linkage to biology and health sciences (McGregor, 2019; Wesley, 2015). Food preservation methods and food safety lessons introduce applied chemistry and microbiology. Students investigate chemical reactions, spoilage mechanisms, pasteurisation, cooking (chemical and physical changes), and the influence of temperature and pH on microorganisms (Apple et al., 2016; Deaton et al., 2018). Scientific experimentation may include hypothesis-driven recipe development, comparative studies of preservation techniques, or analysing the causes of food-borne health issues (Deaton et al., 2018; Turkki, 2015).

Secondly, from an arts perspective, including textiles and craftsmanship. Students explore the chemistry and physics of fibres, distinguishing between properties of natural vs. synthetic materials, moisture retention, colourfastness, and allergenic qualities (Dislere, 2012; McGregor, 2019). Experiments with dyeing, fabric strength, and environmental biodegradability of materials reinforce scientific thinking and the application of laboratory methods to everyday products (Dislere, 2012; Park et al., 2016).

Thirdly, from a sustainability perspective, including responsible living and resource management. Environmental science concepts pervade this strand, including ecological footprints, energy use, sustainable agriculture, recycling, and human development (Colucci-Gray et al., 2019; Turkki, 2015). Students may explore household impacts on the environment (waste, water, energy) and investigate scientific solutions for sustainability at the family and community level (McGregor, 2019).

Technology

In nutrition, diet and health activities, there is extensive use of kitchen technology, from basic cooking appliances to advanced food processing equipment, and ICT tools like nutritional analysis applications and databases for dietary planning. Professional and domestic kitchens now commonly integrate digital temperature probes, programmable ovens, and online meal-planning tools. This digital shift connects HE with the “T” in STEAM (Bush & Cook, 2019; Dislere, 2012; Park et al., 2016). The development and critique of new technologies for healthy eating or for food safety monitoring (e.g., using applications to record calorie intake or track allergens) also demonstrates the evolving intersection of this strand with the world of technology (Wesley, 2015).

While textiles and craft are also technologically advanced fields. Modern classrooms may use CAD programs for designing patterns or apparel, digital embroidery, and advanced sewing machines (Dislere, 2012). There is also increasing interest in “smart textiles,” merging electronics with fabric to create wearable technology (Dislere, 2012). ICT resources allow students to research, model, and prototype ideas efficiently and with a broader creative reach (Dislere, 2012).

Similarly, home automation, ICT for budget and resource tracking, apps for food waste auditing, and energy-saving appliances bring technology to daily sustainability efforts (Bush & Cook, 2019; Dislere, 2012). Families might use digital calendars, spending trackers, or innovation in household tools for resource management and sustainability (Dislere, 2012).

Engineering

The engineering design process is evident in areas such as health and nutrition. Recipe development and food product innovation (including packaging, preservation, and preparation), as well as improvements to kitchen workflow or layout, follow stages such as defining a problem, ideating solutions, prototyping, testing, and refinement (Henriksen et al., 2017). For instance, students can use engineering thinking to create a new recipe that accounts for dietary restrictions, design experiments to minimise waste, or improve efficiency and safety in a kitchen setting (Apple et al., 2016; Park et al., 2016; Randel, 2014). Such approaches not only strengthen understanding of engineering but also encourage iterative, problem-based learning, central to STEAM education (Land, 2013).

Similarly in textile and craft lessons, students employ the engineering design process in garment construction and pattern drafting (Apple et al., 2016; Randel, 2014). This might involve ideating, developing, testing, and refining bags for strength or comfort, or engineering ergonomic design solutions for particular consumer needs (Apple et al., 2016; Saratapan et al., 2019). Engineering principles may also be applied in product testing, such as ensuring a hand-crafted bag can hold a certain weight through iterative redesign (Saratapan et al., 2019).

Moreover, applied engineering is witnessed in optimising home layouts for resource efficiency, developing upcycling systems, and designing sustainable solutions for water, waste, and energy management (Dislere, 2012; Yakman, 2017). Systems thinking, understanding household operations as interrelated flows (water, energy, materials) mirrors engineering and systems design thinking in STEAM (McGregor, 2019).

Arts

HE draws from the arts to elevate food staging, plating, and garnishing, fostering creativity and attention to detail (Randel, 2014; Turgeson, 2014). Lessons often explore cultural food traditions, blending historical and artistic perspectives on culinary practices (Dislere et al., 2020). The artistic aspects of food preparation can also be tied to emotional and cultural expression, exploring cuisine as a mode of creative and social communication (Taylor, 2016).

Textiles, craft, and design are traditionally artistic domains. Students develop aesthetic sensibilities through fashion design sketches, costume construction, crafting techniques, and by drawing inspiration from cultural textile traditions (Aquino, 2017; Harris & de Bruin, 2017). Lessons often require artistic creativity in the use of colour, form, pattern, and expression, blending the functional with the beautiful (Randel, 2014).

Artistic expression in sustainability may appear as creative upcycling, interior design with recycled materials, eco-friendly decoration, and crafts that reflect cultural heritage and environmental values (McGregor, 2019). Communication of sustainability principles often uses visual and performing arts (posters, videos, exhibitions) (Perales & Aróstegui, 2024).

Mathematics

Quantitative skills are foundational in areas such as food, diet and health, students use math to scale recipes, measure ingredients, calculate nutritional values (like macronutrient ratios), determine portion sizes, analyse food costs, and stick to meal budgets (Deaton et al., 2018). Math is also essential in experimental cooking (ratios, percentages, data collection), food processing (yield percentages, conversions), and even in evaluating the economic impact or efficiency of dietary choices (Wesley, 2015).

Likewise, mathematical skills are required in textiles and craft for measurements, pattern drafting, geometric calculations (e.g., area for fabric requirements), symmetry, ratio, and scaling (Deaton et al., 2018). Budgeting for materials, optimising cost efficiency, and estimating labour time are also core mathematical activities, strengthening numeracy and practical problem-solving (Dislere, 2012; Wesley, 2015).

While, quantitative analysis is used for budgeting, investment calculations, and assessing the economic and environmental impact of family decisions (Rabalais, 2014; Turkki, 2015). For example, calculating the carbon footprint of transportation choices, measuring energy use, or evaluating cost savings from sustainable practices supports strong mathematical skills (Wesley, 2015).

In addition, the analysis of the reviewed articles revealed several key themes that consistently underpin the integration of HE education within STEAM areas. Central to these is interdisciplinary learning, which facilitates connections across diverse subject areas, reflecting the holistic nature of HE. Problem solving and critical thinking emerged as core competencies, with many studies highlighting the value of equipping students to navigate complex, real-world challenges. Creativity and design thinking were also prominent, often linked to hands-on, project-based tasks that mirror authentic life scenarios. Closely related is the emphasis on real-world application and life skills, reinforcing the subject's practical roots in everyday living. Additionally, collaboration and teamwork featured strongly, underscoring the importance of social learning and communication. The integration of technology was identified as both a tool and a context for learning, enabling modern and relevant teaching practices. Finally, a future-oriented focus on innovation and future skills highlights the role of HE in preparing students for dynamic societal and workforce needs. Together, these themes affirm the subject's relevance and adaptability in contemporary education.

Limitations, Challenges and Future Directions

A thematic review was employed to enhance the trustworthiness of our findings through a transparent six-step process by Naeem et al. (2023). Each step, from the formulation of research questions to interpretation of results was guided by clear criteria to maintain consistency and reliability. We critically evaluated sources to ensure their academic quality and relevance. This structured approach enhanced the credibility of connections identified between HE and STEAM disciplines.

Nonetheless, one limitation of our thematic review is the dependence on available literature, as some pertinent articles were inaccessible. Additionally, the thematic reduction of complex and context dependent data into seven overarching themes introduced a risk of oversimplification. To mitigate the potential loss of depth and nuance, the review was deliberately restricted to literature published within the past decade.

Despite its rich history and clear relevance to STEAM, HE has often struggled for recognition and legitimacy within educational systems. In many countries, the subject has been marginalised, its complexity reduced to 'cooking and sewing', and its status diminished relative to more narrowly defined academic disciplines (Ma & Pendergast, 2011). This marginalisation has implications not only for the profession but also for society's capacity to address complex, interdisciplinary challenges related to health, sustainability, and well-being.

Nevertheless, there is growing recognition of the need to revitalise and reimagine HE education. As societies confront issues such as food security, environmental sustainability, and public health, the integrative, applied knowledge fostered by HE is increasingly valued. The field's alignment with STEAM provides a powerful framework for its renewal, enabling it to contribute to the development of critical, creative, and socially responsible citizens.

Conclusion

The literature review synthesises a decade of diverse research to provide a clear, evidence-based understanding of how HE and STEAM have been conceptualised, connected and implemented, offering readers a reliable foundation that informs future research, guides pedagogical decisions and supports effective integration across educational contexts.

The origins of HE education are rooted in the social, economic, and political transformations of the nineteenth and twentieth centuries. Initially conceived to formalise and elevate domestic knowledge, the field has evolved into a multidisciplinary domain that integrates science, technology, engineering, the arts, and mathematics. Its history reflects the challenges and opportunities of gendered education, the struggle for professional recognition, and the enduring relevance of practical, life-oriented learning.

The connections between HE and STEAM are profound and enduring. Both fields share a commitment to interdisciplinary learning, problem-solving, and the application of knowledge to real-world challenges. As educational systems seek to prepare students for the complexities of contemporary life, the integration of HE and STEAM offers a promising path forward, one that honours the field's rich history while embracing its potential for innovation and social impact.

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PEER-REVIEWED PAPER

Teachers' Perspectives on Advancing the Teaching of Home Economics on the Island of Ireland

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Abstract

Home Economics education aims to equip young people with the knowledge, skills, and the dispositions and values for healthy and sustainable living. This research undertakes a comparative analysis of the enablers and barriers to teaching Home Economics on the island of Ireland from the perspective of Home Economics teachers. A survey was completed by 358 Home Economics teachers, comprising 198 teachers from Ireland and 160 teachers from Northern Ireland (NI). The analysis identified similar aims for Home Economics education, although how the subject was configured on the broader curricula and what elements of the field of Home Economics were included in curriculum specifications varied. Whilst the majority of Home Economics teachers felt the subject was supported in schools, they reported significant challenges in relation to the resourcing of the subject; the workload and expectation involved in teaching a practical subject; how practical classes are timetabled; and the curriculum content, particularly at senior cycle which may have an adverse impact on the teaching and learning of the subject in the classroom.

KEYWORDS: **HOME ECONOMICS, SECONDARY SCHOOL, PRACTICAL EDUCATION, TEACHERS' EXPERIENCES**

Introduction

The island of Ireland has two distinct jurisdictions with separate Governments—Ireland, and Northern Ireland (NI), with each country having its own education departments. The Department for Education, Northern Ireland (DENI) approves all curricula developed by the Council for Curriculum, Examinations and Assessment (CCEA) which is then implemented in schools across NI. Similarly, in Ireland, the National Council for Curriculum and Assessment (NCCA) develops curricula for approval by the Minster for Education and Skills.

McCloat, A., Davidson, M., Coffey, S, & Doherty, P. (2025). Teachers' Perspectives on Advancing the Teaching of Home Economics on the Island of Ireland. International Journal of Home Economics, 18(2), 87-102.

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Home Economics, as a curriculum area, "facilitates students to discover and further develop their own resources and capabilities to be used in their personal life" and to prepare them for "optimal and sustainable living" (International Federation of Home Economics [IFHE], 2008, p. 1). The subject Home Economics has a long tradition on the secondary school curriculum in Ireland (McCloat & Caraher, 2019); however, recent curricula changes in both jurisdictions have had a significant impact on the teaching of Home Economics for both teachers and students. This paper presents the results of a comparative study of the enablers and barriers of the teaching of Home Economics on the island of Ireland from the perspective of Home Economics teachers. The comparative analysis is explored across four themes: teaching Home Economics; resourcing Home Economics; teachers' perspectives of the curriculum; and policy implications for Home Economics education on the island.

Home Economics on the Northern Ireland Curriculum

Key Stage 3 (KS3) (ages 11–13) aims to empower young people to develop their potential and to make informed and responsible decisions throughout their lives (CCEA, 2007a). Following a period of reform, Home Economics has been repositioned to form a compulsory subject strand of Learning for Life and Work (LLW). This is a significant change from its previous position as an optional contributory subject within the area of study of Science and Technology (DENI, 1992). The placement of Home Economics as part of LLW reflects the subject's contribution to developing the skills and competencies necessary for life and work (CCEA, 2007b).

Home Economics at KS3 is underpinned by three key concepts: Healthy Diet; Home and Family Life; and Independent Living (CCEA, 2007c). Through studying 'Healthy Diet', students explore how to achieve a healthy diet through theoretical and practical cookery skills (CCEA, 2007d). The concept of 'Home and Family Life' offers students the opportunity to study the roles and responsibilities of individuals within a range of home and family structures and to investigate the changing needs of the family through the lifecycle (CCEA, 2007d). The study of 'Independent Living' encourages students to understand the importance of becoming discerning consumers by developing a range of skills to promote independence through planning, managing, and using resources. Aspects such as managing money, factors influencing consumer choice, consumer rights and responsibilities and the role of consumer organisations in providing support are also studied (CCEA, 2007d).

As part of the revision process undertaken by CCEA, General Certificate of Secondary Education (GCSE) (ages 14–16) Home Economics was rebranded as GCSE Food and Nutrition, being first taught in September 2017. Whilst elements of the Home Economics Specification remain, an emphasis has been placed on food and nutrition, with a refined focus on consumer related topics (CCEA, 2016).

GCSE Food and Nutrition is an optional two-year linear programme delivered through 120 guided learning hours and consists of two components of equal assessment weighting. Component 1, Food and Nutrition comprises nutrition; recipe modification; meal planning; nutritional and dietary requirements; food provenance; food processing and production; food safety; effective consumerism and managing resources. Assessment of this component is a two-hour external written examination, taken at the end of year 2. Component 2, Practical Food and Nutrition, is a controlled assessment task, undertaken in year two of the course, comprising a 3500-word report and a practical exam. The task requires students to undertake research and justify their selection of a range of dishes. Students prepare, cook, and serve the selected dishes under exam conditions within three hours (CCEA, 2016).

In 2022, a total of 2,746 students sat the exam which comprised 2,102 females and 644 males. Although it is still very gendered biased, figures in 2022 demonstrated a slight decline in the number of males which was in contrast to the previous year's trend of a small year on year increase in males studying the subject (559 in 2019; 605 in 2020; 688 in 2021) (CCEA, 2022).

The rebranding of Home Economics was not limited to GCSE level, with a name change and refreshed subject content also occurring at General Certificate of Education (GCE) Advanced level (A Level) (ages 16+). Under its new guise, GCE A Level Nutrition and Food Science had a firm focus on the food industry and the connections between diet, lifestyle, and health (CCEA, 2018). This will facilitate progression to further study at university in a related area or direct employment into the food industry, which employs 100,000 people in Northern Ireland (Northern Ireland Food and Drinks Association, 2020). GCE Food and Nutrition is available at two levels: Advanced Subsidiary (AS) and A Level. In year 1, AS comprises AS1: Principles of Nutrition and AS2: Diet, Lifestyle and Health. As part of AS1, students study nutrition and nutritional requirements through the lifecycle. In AS2, students explore eating patterns, energy and energy balance, diet related disorders, alcohol, and physical activity. In Year 2, there is a choice of modules to study. Option A, Food Security and Sustainability, requires the study of consumer behaviour, food security, food poverty, food sustainability and food waste. Option B, Food Safety and Quality, includes food safety, microbiological and chemical contamination, additives, allergens, food legislation. The Research Project module requires the completion of a 4000-word research-based project on an area from one of the modules outlined above (CCEA, 2018). At A Level, uptake of the subject is also predominately female. Similar to GCSE, there has been a marked increase in the number of males studying the subject over the two latest exam series which aligns with the launch of GCE Nutrition and Food Science. In 2022, a total of 611 students took the exam which comprised 544 females and 67 males (CCEA, 2022).

Home Economics in Ireland

Junior Cycle Home Economics (ages 12–15) is an optional area of study which aims to "develop students' knowledge, attitudes, understanding, skills and values to achieve optimal, healthy and sustainable living for every person as an individual and as a member of families and society" (Department of Education and Skills [DES], 2017, p. 5). The specification comprises a three-year course of study which is designed for a minimum of 200 hours of timetabled student engagement. Despite being an optional area of study, Home Economics remains a consistently popular subject choice at junior cycle where, in 2022, 39% (*n* = 26, 322) of the total number of junior cycle students studied Home Economics, comprising 79% (*n* = 20,809) females and 21% (*n* = 5,513) males (State Examinations Commission [SEC], 2022).

The learning outcomes in the Home Economics Specification are arranged as three interconnecting strands of study: Food, Health and Culinary Skills; Responsible Family Living; and Textiles and Craft. Each of the strands are underpinned by four cross-cutting elements which have a focus on Health and Wellbeing; Individual and Family Empowerment; Sustainable and Responsible Living; and Consumer Competence.

Food Health and Culinary Skills focuses on encouraging students to develop a positive and healthy relationship with food. Students are asked to apply their understanding of scientific and theoretical principles in making informed decisions which will have a positive impact on their health and wellbeing. A broad range of areas are studied within this strand and include, inter alia, menu planning; healthy eating; nutrition; shopping; portion control; food waste;

reading food labels; practical food preparation and cooking skills; ecological and ethical principles of food; diet related diseases; and commercial food production. The strand 'Responsible Family Living' facilitates students to develop essential life skills which will empower them to "manage resources responsibly and sustainably in the home, family and community" (DES, 2017, p. 16). As part of this strand, students study areas such as family relationships; sustainable everyday practices; consumer decision making; financial literacy; consumers' rights and responsibilities; interior design. The third strand, Textiles and Craft, aims to develop students' practical textile skills and creativity. A key focus of the strand is on sustainability and how consumers make sustainable choices for purchasing and maintaining clothing and textiles.

A practical pedagogical approach is encouraged in Junior Cycle Home Economics, and this is reflected in assessment where there are 50% of the externally assessed marks weighted towards a practical food skills examination at the end of the three years of study. This is externally assessed by examiners working on behalf of the State Examinations Commission (SEC). During the practical food skills examination students are required to demonstrate their food literacy skills, using a problem-based learning approach, to meet the specific requirements of a brief distributed in advance by SEC.

Leaving Certificate Home Economics—Scientific and Social (ages 15–18) is an optional area of study which aims to equip students with knowledge, understanding, and skills for managing their own lives, as well as for further and higher education, and work. Home Economics—Scientific and Social focuses on how individuals and families manage their resources to meet physical, emotional, intellectual, social, and economic needs. It underscores the importance of the interdependent relationship that exists between individuals or families and the environment and helps encourage a sense of responsibility towards sustaining resources (Department of Education and Science, 2008). The structure includes: a core (80%), and an elective, from a choice of three (20%). The core comprises three areas: Food Studies (45%), Resource Management and Consumer Studies (25%) and Social Studies (10%). The three electives are: Home Design and Management; Textiles, Fashion and Design; and Social Studies. The use of a core and elective structure enables the study of specific aspects of the syllabus, without the need to make them compulsory (SEC, 2011). In 2022, 21% of the total cohort (n = 12,132) of students at senior cycle, sat the leaving certificate examination, comprising 86% (n = 10,393) females and 14% (n = 1739) males. The selection of the subject at senior cycle has remained consistently around 20% of the total cohort of students since 2014 (SEC, 2022).

Practical work is an essential component of the Home Economics syllabus at Senior Cycle, with learners having to complete practical coursework journals worth 20% of their overall grade. Learners undertake four practical assignments, based on five areas of practice: Area A—Application of Nutritional Principles; Area B—Food Preparation and Cooking Processes; Area C—Food Technology; Area D—Properties of a Food and Area E—Comparative Analysis to include Sensory Analysis. For each of the assignments, students must complete one cookery practical.

Methods

The aim of this research was to undertake a comparative study of the enablers and barriers to teaching Home Economics on the island of Ireland from the perspective of Home Economics teachers. Home Economics teachers from NI and Ireland were recruited to complete an online survey. Cognisant of cross-border variations in curriculum, two surveys were issued, one for NI and one for Ireland. The study was conducted with ethical approval from the School of Education, Research and Ethics Committee, Ulster University.

Home Economics teachers, across the island, were contacted through a variety of snowballing strategies such as sharing a survey link via social media; internet; direct email; and Home Economics subject associations. In order to access and participate in the survey, the respondent must have answered a screening inclusion question which confirmed they were a Home Economics teacher currently teaching in either NI or Ireland and give their consent to participate in the study. The target sample size of 196 Ireland and 115 NI participants was ascertained using power calculations based on 700 post primary schools in Ireland and 199 post primary schools in NI, allowing a 5% margin of error and a 90% confidence base. This sample was achieved and 198 teachers (Ireland) and 160 (NI) participated. All data was analysed using SPSS (V24). Framework analysis was used to organise qualitative data according to priority themes (Ritchie & Spencer, 1994). This paper, one of the first of its kind, presents the results, from a teachers' perspective, of the enablers and barriers of teaching Home Economics on the island of Ireland.

Findings

Demographics

The survey was undertaken by 358 Home Economics teachers on the island of Ireland, comprising 198 teachers from Ireland and 160 teachers from NI. Ninety eight percent (98%, n = 352) of all respondents were female. The participants had a range of teaching experience, with over a quarter of respondents in each jurisdiction having over 25 years teaching experience. The survey highlighted how the educational pathway to becoming a Home Economics teacher differs between Northern Ireland and Ireland. In Ireland, the vast majority of respondents had studied a Bachelor of Education (B.Ed.) Home Economics honours degree programme. In NI, teachers followed a range of pathways to become a teacher, but the majority had studied a Post Graduate Certificate of Education (PGCE) in Home Economics, with an undergraduate degree in associated areas, namely food, nutrition and consumer studies.

The Home Economics teachers work in a department that has, on average, 2.8 (NI) and 2.5 (Ireland) Home Economics specialist teachers. Remarkably, 49% (n = 75) of teachers in NI indicated they have an out-of-field teacher(s) working in their department teaching Home Economics, whereas only 12% (n = 22) in Ireland reported this context situation. Teachers who worked with an out-of-field teacher identified no consistent method of support being offered to nonspecialist teachers. Approaches included team teaching with a specialist; sharing of resources; out-of-field teacher teaching theory lessons only; and additional support provided by the subject leader. Teachers in NI raised a need for educating more subject specific teachers for the NI system, with one participant stating:

> teaching should be by specialist teachers and if this is not possible then some additional training should be offered for nonspecialists. (NI150).

Teaching Home Economics

Timetabling Home Economics classes emerged as an important influence on the teaching of the subject. A higher percentage of respondents in NI (53%, *n* = 85) than in Ireland (32%, *n* = 63) indicated that their current timetabling had a negative influence on their teaching of Home Economics. In particular, the time allocation to the subject per week was highlighted as negatively impacting their quality of teaching. In order to adapt, teachers identified having to choose recipes with reduced complexity and skill level and in some cases, having elements of the recipe prepared in advance for students e.g. pastry. In Ireland, the emergence of one-hour classes was raised by the majority of teachers as concerning and were regarded as 'detrimental' to the quality of teaching Home Economics. As one teacher noted, due to time limitations:

> practical classes are dumbed down due to the inability to carry out teaching of key skills. (Ireland29)

Similarly, in NI, a teacher commented:

> lessons are 1 hour long which essentially means 55 mins. This is not enough time to teach 20 children how to cook. Skills are being lost. (NI57).

The expectation and pressure on a practical class teacher was also noted by Home Economics teachers. Teachers reported practical classes being scheduled over a break or at the end of the day which necessitated teachers sacrificing their break periods and lunches to prepare the practical room to ensure students could complete their practical work. It was regarded that this time pressure and the constant 'rush', given the allocation of class time, had a negative impact on both student and teacher's wellbeing. As one respondent noted:

> timetabling next to break/lunch time implies an expectation that the teacher will work through breaks which contravenes wellbeing. (Ireland13).

At Junior Cycle, teachers in Ireland had more time allocated each week, with an average of 111 minutes. This time was greatly reduced in NI, with an average of 72 minutes allocated per week for the teaching of KS3 Home Economics. Differences also arose in reported class sizes, with teachers in NI having larger classes, with an average of 23, compared to 20 students in Ireland. When considering examination years in NI, GCSE (KS4) and A Level (post 16), a similar pattern emerged; class time increased and class sizes decreased when compared to KS3. GCSE classes were allocated an average of 120 minutes per week, with an average class size of 20 students. However, A Level classes were allocated an average of 125 minutes per week, with an average class size of 15 pupils. For Leaving Certificate, a similar situation emerged, with an average of 125 minutes allocated and an average class size of 18 students. However, this may be as a result of fewer students choosing to study leaving certificate Home Economics than a strategic attempt in planning.

The majority of teachers (85% in NI and 53% in Ireland) taught practical food fortnightly at KS3 and Junior Cycle. However, more teachers in Ireland taught practical food to junior level on a weekly basis (37%, *n* = 73) when compared to NI (5%, *n* = 7). Interestingly, there is a marked shift in the frequency of practical food classes at senior cycle, with only 3% (*n* = 6) of teachers in Ireland undertaking practical cookery classes either weekly or fortnightly with Leaving Certificate students. In NI, at KS4, 39% (*n* = 56) of NI teachers report having practical classes every week. The frequency in which textiles was undertaken in Ireland was lower when compared to practical cookery. Only 15% (*n* = 28) of teachers at junior and 1% (*n* = 2) at senior

cycle indicated they undertook textile work on a fortnightly basis, with the vast majority 80% (*n* = 147) and 98% (*n* = 162) indicating it was less often.

Large class sizes were of more concern in NI than Ireland with a higher proportion of respondents in NI (52%, *n* = 82) reporting that large class sizes had a negative impact on their teaching versus 28% (*n* = 55) in Ireland. The majority mentioned that their class numbers had been increasing and are at, or past, capacity. As a teacher noted:

> 24 in a class is a massive number of students to care for in a practical setting. I believe this number should be reduced to a maximum of 20 to instil an atmosphere conducive to learning. (Ireland76).

Respondents noted that these larger classes were not conducive to effective classroom management or teaching for students with behavioural issues or those with differing abilities. The larger class size reduced the teachers' abilities to undertake one-on-one teaching which impacted the students' skills progression. Conversely, 49% (*n* = 96) of Ireland and 27% (*n* = 43) of NI respondents reported class size as having a positive impact on their teaching of Home Economics. The majority of respondents from Ireland and NI who viewed class sizes positively mentioned having number restrictions placed on their classes of normally 20–24 students, imposed with the support of management:

> We have a max 20 policy in our school. The timetabling staff are very supportive on this matter and respect the need for a controlled number of pupils in the practical environment. (NI143).

It was felt smaller numbers allowed for a greater depth of learning and facilitated the teacher to give attention to students whilst maintaining proper health and safety conditions:

> I recently fought for smaller class numbers in Junior Cycle classes as per directive from TUI [teachers union]. This has made a huge difference to the quality of teaching and learning as well as improved the health and safety of all students taking part in practical classes. (Ireland52).

Home Economics teachers in both jurisdictions were involved in a range of initiatives in school to promote the subject. The most frequently cited activities among the teachers were: cooking or food related clubs (27%, *n* = 96); competitions (20%, *n* = 71); healthy eating week or activities (16%, *n* = 59); participating in wellbeing committees (9%, *n* = 34); external engagement with stakeholders to give talks or demonstrations (7%, *n* = 27); subject fairs and open days; and in Ireland, transition year initiatives (3%, *n* = 12); craft clubs and courses (7%, *n* = 27). Whilst engagement in promotional initiatives in schools was frequently cited, involvement in Home Economics related activities outside school was limited. In NI, this was reserved for providing cooking courses or camps (2%, *n* = 8) and working for CCEA (2%, *n* = 8). Similarly, in Ireland the main activity mentioned related to providing cooking courses or camps (3%, *n* = 12). Ireland respondents mentioned involvement with the Association of Teachers of Home Economics (ATHE) (2.7%, *n* = 10) as a key activity outside school.

Resourcing Home Economics

Facilities available to prepare and teach practical food skills in schools on the island of Ireland were largely comparable, with slightly more teachers in NI having a dedicated practical cookery room, 99% (*n* = 158) compared to 87% (*n* = 172) in Ireland. There was consensus amongst the significant majority of participants (81%, *n* = 160) that facilities available were mostly adequate to teach the curriculum. In considering the facilities available for teaching the textile component of the curricula, this applied only to Ireland as textiles no longer forms part of the NI curricula. Slightly under half (48%, *n* = 89) indicated the presence of a dedicated sewing

room, however, half rated the facilities as inadequate to teach the curriculum. A joint food-textiles room was used by 43% (*n* = 76) with slightly over half rating the room as inadequate for teaching textiles.

To assist in the preparation of practical classes, a Home Economics Technician was employed by the vast majority (87%, *n* = 135) of departments in NI, with contracts varying from a few hours per week to full-time basis with 84% (*n* = 129) indicating that they had access to a dedicated food preparation room. Conversely, only 3% (*n* = 5) of departments in Ireland had a Home Economics Technician to support the teacher.

Slightly more than half of NI respondents (52%, *n* = 82) and Ireland respondents (56%, *n* = 109) agreed that the availability of resources in their school had a positive influence on their teaching. They cited examples including, modern facilities for teaching, and a management team who were supportive of the subject. In Ireland, respondents felt that the resources available were helpful and there was support for collaborating and sharing resources:

> Home Economics is well resourced in our school—we are also getting a new extension to the school which includes a second new kitchen. (Ireland166).

For respondents who felt the lack of resources had a negative influence (21% in NI and 16% in Ireland) a lack of funding; inadequate facilities and safety hazards were cited as being the reason.

A significant disparity between jurisdictions arose in the financial support by the school provided for practical food classes. In Ireland, 77% (*n* = 148) required students to bring their own ingredients, compared to 26% in NI where schools tend to supply the ingredients, with students required to make an annual contribution to reimburse the expense. At KS3, students are mostly commonly asked to contribute between £10–£15 per annum. However, at KS4 it is estimated that students will incur a cost of up to £40 per annum. In Ireland, at junior cycle level, 41% (*n* = 70), teachers estimated the financial cost to their students towards practical food more than €60 per year. At Leaving Certificate level, due to less practical classes, teachers estimated costs for students between €20–€40 per year.

Home Economics teachers in both Ireland and NI cited having access to kitchen facilities and/or equipment as being an important mechanism by which they can feel supported. A NI teacher commented:

> facilities are excellent, and the department is equipped with a hard working HE Technician who orders ingredients and prepares for practical classes. (NI21).

Interestingly, a lack of support was mentioned explicitly by teachers in both jurisdictions as frequently occurring:

> school has not shown support to the subject in last few years—quite the opposite. Teacher retired and her position not even advertised, showing lack of respect for the subject... (Ireland13).

Teachers in Ireland noted a budget for equipment and timetabling as important factors to be considered by school management, whilst those in NI stated timetabling and supporting educational activities for teachers including continuing professional development (CPD) would support their teaching.

Teachers' Perspectives of the Curriculum

Teaching practical food was mentioned by most respondents in both Ireland and NI as the most enjoyable and rewarding component of Home Economics curricula to teach. They reported that students appeared most engaged with these topics, elaborating that it builds confidence and pride, where:

> students can see the value of the learning and are happier to be busy with hands on tasks. (Ireland2).

They outlined a sense of achievement being able to facilitate students to develop practical life skills:

> the practical element of the subject is fantastic. It is such a privilege to equip young people with practical skills that will carry them through life. (NI67).

Teachers in Ireland rated, in order, the topics of social studies; food studies; and consumer studies most positively as they relate to students lives:

> students are engaged as the topic is something that is relevant to them, and I feel that it is useful information and knowledge and skill that will prepare them to live a healthy, happy life. (Ireland52).

Similarly, teachers in NI reported that the nutrition; food choice; and diet and health were most enjoyable to teach, with some additional mentions of food science and child development.

Relatability of the curriculum emerged as a key challenge of teaching the family resource management aspects of the curriculum. Students cannot always relate content to their own current stage of life and therefore, this can be challenging to teach to ensure students maintain interest. Additionally, the sensitivity of teaching family studies, given the diverse societal family contexts, was also an aspect that teachers tried to navigate.

Teachers in both Ireland and NI remarked on the content heavy nature of the subject at senior cycle. Teachers lamented the reduced number of practical classes at leaving certificate which were not feasible outside the prescribed coursework because of the depth and breadth required of the theoretical aspects of the curriculum to cover. They referred to the written coursework as requiring strong literacy skills as opposed to a focus on the practical application. They attributed this combination to an explanation for the decline in student numbers. Similarly, teachers in NI noted a concern over the breadth of content on the senior curriculum and the burden of excessive assessment and its impact on the quality of the student experience. In addition, they referred to time implications on practical teaching and the overcrowding of classes impacting on the quality of education provision:

> at KS4 I have found it difficult to cover all the course content and do controlled assessment. It is difficult to meet all the deadlines of assessment that are expected. (NI122).

A number of NI teachers reported the nutrition and food science component for the A level was set too high and was challenging for students to engage with:

> the A2 Specification is a little removed from Home Economics in that the content is more relevant to third level education food technology courses. A2 pupils often cannot grasp some of the concepts due to having no practical experience in the food industry. (NI104).

Supporting Home Economics Teachers CPD

CPD played an important role in supporting Home Economics teachers in their practice. This was particularly the case for teachers in Ireland, where the majority (65%, *n* = 126) regarded engaging with CPD as having a positive influence on their practice. In contrast, only 38% (*n* = 59) of NI teachers found it beneficial with 66% noting they had not engaged in any CPD activities in the last two years. Teachers who viewed it as a positive influence, noted CPD also provided an opportunity to network, collaborate, share ideas, and learn from other Home Economics teachers. It was also regarded as an opportunity to keep up to date with curriculum developments and learn new skills and methodologies. Teachers suggested more opportunities and funding to participate in CPD were required. Both NI and Ireland teachers suggested more subject specific CPD is needed:

> any enhancement of subject knowledge is important. It is lacking today with funding issues and sub cover. (NI66).

Interestingly, the membership of a subject association was more common amongst teachers in Ireland, with 76% (*n* = 150) indicating membership of the ATHE compared to 18% (*n* = 28) in NI who were members of the separate NI ATHE. This was viewed as an important opportunity to engage with CPD and other teachers.

Policy Implications for Home Economics on the Island

From the perspective of Irish teachers, the most mentioned curriculum policy recommendation (*n* = 128) was the introduction of compulsory Home Economics at junior cycle. One respondent stated:

> Home Economics should be mandatory and a core subject for Junior Cycle as it is a key life skill. (Ireland25).

Respondents in NI emphasised the importance of Home Economics retaining its compulsory status on the curriculum with no class rotations.

Funding and/or specific grants to support Home Economics was called for by teachers in both jurisdictions. Particularly, funding for the purchasing of equipment, ingredients for class, and the updating of facilities was suggested as being extremely beneficial. Additionally, it was also highlighted that there should be a standardised policy in place that specifies quality standards for Home Economics specialist facilities; for technical support; and the time allocated on a timetable to teach a practical subject. Respondents noted:

> policy on timetable at government level, no point in talking about obesity and the need for food skills if the resource of time per session is not available to facilitate adequate learning experiences. (Ireland48).

Across both jurisdictions, teachers called for a review of the curriculum, albeit at different levels. In NI teachers referred to a review of the relevance of the curriculum and a preferred practical pedagogical focus with an associated need to reduce GCSE content. Furthermore, they requested clearer guidance on the specifications to enhance their teaching and referred to the need for a subject specific textbook. Teachers in Ireland called for a complete reform of the Leaving Certificate syllabus. It was felt that the current syllabus too theoretical and would be enhanced with a more balanced focus on developing associated practical skills, they noted:

> more incorporation of basic life skills classes for students who have never taken home economics so that they can cook basic meals for themselves. (Ireland38).

It was also suggested that the syllabus requires 'modernising' to ensure it is relevant and current to students. They reiterated the breadth of the curriculum, and the associated workload has a negative connotation by students:

> the leaving cert course is too long. (Ireland41).

> less content in senior cycle is required so quality teaching and learning can be spent on all areas of the course. (Ireland63).

This was viewed as a deterrent for choosing the subject:

> there are two assessment components to Home Economics, no other subject requires this of students, they do not want to study a subject with a greater workload than other subjects. (Ireland34).

The focus of assessment in senior cycle Home Economics on written assessments was noted by many teachers as contributing to a negative perception of the subject at this level:

> the journal is very detailed and repetitive. It is very time consuming. The other subjects that have coursework are much shorter. The marking scheme seriously needs to be looked at when only 3% achieve a H1. Students vote with their feet and choose subjects where they can attain H1s in other subjects more easily. (Ireland130).

A suggestion to counteract this was to:

> have [a] practical exam in line with junior cert, concentrate on skills rather than write up. (Ireland36).

In general, teachers were content with the balance of practical and theoretical assessment at junior cycle Home Economics.

Discussion

Many years may have elapsed since the introduction of Home Economics as a subject on the island of Ireland (McCloat & Caraher, 2019; Moran, 2007), and whilst teaching, as a profession, continues to remain a predominately female profession, it is evident that Home Economics is taught almost exclusively by females. The situation is not unique to this island, with anecdotal evidence suggesting similar patterns in many other countries. Although literature may outline the causes and solutions to reverse the trend, few, if any depict a changing pattern. Perceptions of a subject only studied by females (Dewhurst & Pendergast, 2008), coupled with optional status on school curricula across many countries (McCloat & Caraher, 2020a, 2020b) and the perceived lack of relevance and prospects of future study for males (Azubuike, 2012; Nanayakkara et al., 2018) could go some way in explaining why Home Economics continues to have an almost exclusive female teaching network. Teachers can be seen as role models (Lumpkin, 2008) by their pupils and the lack of male Home Economics teachers may also contribute to the gender gap in those studying Home Economics (McCloat & Caraher, 2016). In trying to reverse this trend and entice more males to become Home Economics teachers across Ireland, removing the optional status of the subject at Junior level in Ireland may contribute to alleviating this issue.

As a subject, many obstacles challenge the delivery of Home Economics, including resources; a shortage of subject specialists in NI; limited time on the timetable; and budget constraints (Nanayakkara et al., 2018; Rutland & Owen-Jackson, 2013). Specialist, adequate and well-maintained facilities are essential requirements for the effective teaching of Home Economics (DES, 2008; Education and Training Inspectorate [ETI], 2000; Ofsted, 2005). Although teachers

in this research indicated the availability of resources had a positive impact on their teaching, challenges exist around a lack of modern equipment and facilities, as well as support by school management to facilitate this. Ofsted (2005) identified that the teaching of food is compromised by shortages in resources, for example accommodation, specialist equipment and curriculum time. The lack of a Home Economics technician can result in an increased workload for teachers (Owen-Jackson & Rutland, 2012), this is of particular concern to the teachers in this study, as only 3% of teachers in Ireland reported having access to a Home Economics technician in their school. Consideration of introducing Home Economics technicians to schools in Ireland would go some way to alleviate the workload experienced by teachers in preparation for practical classes, particularly in light of one-hour classes.

The study highlighted that whilst the majority of Home Economics teachers in Ireland taught with Home Economics specialists, many, particularly in NI, have several out-of-field teachers working alongside them. An out-of-field teacher refers to a teacher teaching a subject that they are not educated in or professionally registered to teach. A subject specialist has the ability to provide a deep learning experience, provide more detailed and complex explanations and relate content to real life examples (Eaton et al., 2006; Shreeve, 2018) and have studied the theory, methodology and practice of teaching Home Economics (McCloat & Caraher, 2016). Out-of-field teachers in Home Economics, according to Pendergast et al. (2022), may lack a sense of identity and have not had formal training in the subject specific content or pedagogy which may "negatively impact student learning, teacher effectiveness and student access to role models" (p. 1). Whilst many out-of-field teachers provide a meaningful learning experience for students; observations have reported that it can have an adverse effect on the pupils' learning; limiting students' progress in both theory and practical skills through the avoidance of aspects of the curriculum and ineffective management of practical lessons (ETI, 2000; Goos et al., 2021). The situation of out-of-field teachers was most prevalent in NI. As identified in this study, support to out-of-field teachers is varied and what is offered is perhaps unsustainable in the long term. Thorough planning, establishing close working relationship, sharing of subject knowledge and resources (Shreeve, 2018) may go some way in supporting out-of-field teachers but in the longer-term consideration needs to be given to a more sustainable and joined up approach.

Whilst reported class sizes in Ireland and NI were in line with maximum recommendations (DENI, 2016), many teachers reported larger class sizes as having a negative impact on their teaching. Larger classes coupled with reduced practical time can limit the development and progression of practical skills, creating a learning environment where it is challenging to monitor individual progress. Best practice in teaching Home Economics is observed when sufficient time is allocated to both the practical and theoretical aspects of the subject (ETI, 2000; DES, 2008). From the study it was noted that students are most likely to undertake practical cookery on a fortnightly basis. Research however suggests that engagement in practical cookery on a weekly basis successfully demonstrated the development and progression of practical skills (DES, 2008; Ofsted, 2006). Teachers reported that a wide variation exists between schools in relation to the frequency of practical lessons as well as the provision of ingredients for practical lessons. This was particularly prevalent for lessons in Key Stage 3 / Junior Cycle.

The short duration of time allocated in a class period to the teaching of Home Economics was identified as being problematic for teachers. The duration of a practical lesson can also impact on development of skills and knowledge. Owen-Jackson and Rutland (2012) reported shorter

lesson times can limit the integration of practical work with theoretical understanding. Teachers in this study reported a reduction in class time allocation for the subject had an adverse impact on the skill level being taught and increased the requirement for advance teacher preparation. Research (Höijer et al., 2011; Owen-Jackson & Rutland, 2012) demonstrates reduced class times increases teacher's workload and results in students not experiencing varied skills which can make the integration of practical work with theoretical understanding more challenging. Food literacy skills developed as part of Home Economics enables students to develop a range of transferable and higher order thinking skills (Pendergast, 2012). With curricula across the island seeking to prepare students for life and work (CCEA, 2022; DES, 2017), Home Economics, like many other practical subjects, competes for time on a crowded and finite timetable.

Promoting Home Economics remains to be an important facet of the professional life of the Home Economics teacher. The IFHE, in 2008, called on Home Economists internationally to work towards branding the subject and promoting the contemporary relevance of the subject and the contribution it makes to society. McGregor (2018) calls to develop this further by engaging ambassadors for Home Economics and refers to "an artful and strategic blend of branding, rebranding and ambassadorship is proposed as an important strategy for future proofing the profession and discipline" (p. 12). It was evident from this research that teachers are actively involved and perceive a benefit from their respective subject associations. Some teachers further suggested establishing a network for sharing experiences and resources among teachers. This has referred to this as a "subject discipline collaborative" which helps to reduce the isolation of teachers and assist with their acquisition of new knowledge, skills, and judgement (Nanayakkara et al., 2018). The majority of respondents in both NI and Ireland indicated current provision of CPD had a positive influence on their teaching. However, it Is interesting to note that most of the NI Home Economics teachers in this study had not engaged in any CPD activities within the last two years. Nanayakkara et al. (2018) emphasises the need for frequent and ongoing professional development opportunities and these should be carefully crafted considering the needs of teachers and their students.

From a policy perspective, one of the main disparities between NI and Ireland is the status of the subject Home Economics on the curriculum at junior cycle. In Northern Ireland, Home Economics is compulsory and in Ireland, it is an optional, albeit popular, subject for students. This research demonstrated how NI Home Economics teachers want it to remain as a compulsory subject and those in Ireland are calling for it to be compulsory. Over the years, Home Economics teachers, national organisations and the media have been vocal in calling for compulsory Home Economics for all junior cycle students in Ireland (Boland, 2017; Maguire, 2017; McCloat, 2013; Safefood, 2018; St. Angela's College, Sligo, 2018). This was based on the rationale that all young people should be afforded the opportunity to develop essential food, health, and cooking skills in school so as to empower them for future daily living. Indeed, this took a significant step forward in November 2018 when the Irish Houses of the Oireachtas Joint Committee on Children and Youth Affairs' Report on Tackling Childhood Obesity recommended that the 'Government should consider the introduction of Home Economics as a compulsory subject on the Junior Cycle Curriculum for postprimary schools' (Houses of the Oireachtas, 2018, p. 6). A call for mandatory Home Economics is reiterated internationally, most notably, when Lichenstein and Ludwig (2010), stated it may be "among the best investments society could make" (p. 1858). Similarly, research in Australia (Nanayakkara et al., 2018; Pendergast et al., 2011) identified the important role Home Economics can play in developing food skills among young people and consequently, the need for it to be made available for all students.

Conclusion

This paper explored the enablers and barriers to teaching Home Economics on the island of Ireland from the perspective of Home Economics teachers. Home Economics, as a mandatory subject at Key Stage 3 in NI, was envied by Home Economics teachers in Ireland who called for the subject to be made compulsory at junior cycle. Home Economics teaching remains a predominantly female profession, and it was suggested that mandatory Home Economics in NI and Ireland may go some way in alleviating this issue. Teachers of any practical subject have an increased workload in preparing for these classes; however, this is exacerbated in Ireland where teachers have no access to technical support, unlike NI. The introduction of Home Economics technicians to schools in Ireland, similar to the scheme in NI, would assist teachers and reduce the associated workload in preparing practical classes. Across the jurisdiction, most teachers reported having access to adequate classroom facilities for teaching Home Economics. Challenges persist with the timetabling and the class time allocated to the subject, particularly, the move towards one-hour classes which was of significant concern to teachers for conducting practical food classes. Teachers identified opportunities for subject specific continuing professional development to enhance their teaching of Home Economics. Arising from this, there are numerous opportunities for cross-border collaboration to advance the teaching of Home Economics on the island of Ireland. This paper presented the results, from a teachers' perspective, of the enablers and barriers of teaching Home Economics on the island of Ireland; and it provides important data to support future policy decisions pertaining to Home Economics on the island of Ireland.

Disclosure Statement

The authors report there are no competing interests to declare.

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PEER-REVIEWED PAPER

Pupils' Negotiations and Dialogical Argumentation in the Home Economics Classroom

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Abstract

The aim of this study was to make visible and understand the informal and spontaneous negotiations between pupils in the home economics (HE) classroom by examining what is negotiated and how negotiations are constructed through dialogical argumentation. Eighteen pupils (13–14 years old) from three HE study groups participated in the study. Ten lessons were video recorded at a lower secondary school in Finland. The transcribed video data related to hands-on group activities were analysed using interpretive content analysis. The study shows how pupils negotiate various issues such as food preparation, aesthetics and roles in the group in decision-making situations. Negotiations are constructed through different types of questions and argumentative moves, such as proposing, challenging and rejecting. In addition to practical food preparation skills, food-related learning encourages pupils to practice simultaneously other important skills, such as decision-making, negotiation and argumentation. Teachers can support and teach these skills by valuing the HE classroom as a learning space for negotiations and food preparation as a multiphase, dialogical and collaborative learning activity.

KEYWORDS: **ARGUMENTATION, HOME ECONOMICS CLASSROOM, NEGOTIATION, PUPIL-PUPIL INTERACTION, VIDEOGRAPHY**

Introduction

To meet the demands of our changing societies, schools must evolve and facilitate the development of the 21st-century skills students need to thrive—both at and outside of work—including problem-solving, decision-making, communication and collaboration (Binkley et al., 2012). Home economics (HE) education is deeply rooted in people's everyday lives and integrates skills that students should master to succeed in their lives in a unique way (Taar & Palojoki, 2022).

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In HE, collaboration is the rule, not the exception, and it is almost impossible to finish learning tasks without negotiating (Venäläinen, 2010). Negotiations serve many purposes in the classroom. For example, they can manifest as procedural meaning discussions related to different interests and problem-solving. Additionally, they can also serve as personal, unobservable mental processes or as ongoing interactive, spontaneous occurrences during social activities. (Breen & Littlejohn, 2000.) In schools, negotiations can be characterised as communication in which teachers and pupils engage to settle small disagreements (Frelin & Grannäs, 2010) to reach a mutual agreement (Overman et al., 2019) or at least a reasonable settlement they can live with (Walton, 2009) to proceed with planned classroom activities. Negotiation is also a means of attaining responsible membership within the classroom community. The aim of such membership is to reduce uncertainty during learning and communication and to construct and reflect learning as an emancipatory process. (Breen & Littlejohn, 2000.) In this study, negotiations are considered informal, spontaneous, interactive and procedural decision-making or problem-solving situations to proceed with HE learning activities and are probably not even recognised as negotiations by the pupils.

In addition to practical work and information management, collaboration and interaction skills are one of the main objectives of teaching in the Finnish National Core Curriculum (FNCC) of HE. Negotiation skills are intertwined with collaboration and interaction skills as the curriculum states, for example, to instruct pupils to work in a group, as well as to negotiate for division of work and participate in decision-making of tasks and time management. Likewise, aim of teaching is to instruct pupils to practice listening, constructive conversation and argumentation concerning the planning and practicing of learning tasks. (FNCC, 2014.) Negotiation skills are integrated into the curriculum and are one of the core elements at the level of action in the HE classroom. However, we argue that Finnish HE education and teaching focus strongly on practical skills connected to food preparation. Besides the skills pupils learn through the formal national curriculum, they learn interaction skills while engaging with their peers during classroom activities through the informal, social curriculum (McGregor, 2022). Negotiations enable students to practice their active agency in learning (Breen & Littlejohn, 2000). Dixon (2017) found that HE teachers in New Zealand value the social aspect of learning in their classrooms, as it allows students to develop collaboration and problem-solving skills that are not necessarily learned in other subjects. Interthinking (Taar & Palojoki, 2022) is a medium to develop 21st century skills during lessons, and it adapts to the aims and context of HE education. HE teachers consider especially collaboration skills and thinking as a group important for students, including negotiation and problem-solving, and emphasise teaching them together with substance-related skills (Kuusisaari et al., 2021).

Dialogical argumentation in the classroom

The following sections review the literature related to argumentation connecting it to negotiation in the educational context. An argumentative environment can be described with the dimension of social negotiation, meaning that students can discuss, defend and debunk arguments to build consensus (Nam & Chen, 2017). The term negotiation emphasises the fundamental goal of argumentation in the classroom, which is to interact with peers in dialogue and reach an agreement (Chen et al., 2016). Traditional negotiation mechanisms include the basic linguistic elements of communication (e.g. locutions such as proposing, accepting and rejecting). In argumentation-based negotiation, agents can exchange information and proposals as well as argue about their beliefs, preferences and goals. (Rahwan et al., 2003.) Argumentation is seen as a dynamic process of connecting arguments in a dialogue for some

purpose (Walton, 1996) and as a dialogic process of having an argument, that is, a construction and critique of claims (Nussbaum, 2021). Furthermore, argumentation refers to a process in which the acceptability of standpoints is communicated and tested to resolve differences of opinion (van Eemeren et al., 2015). In practice, people try to convince others of the validity of their claims by reasoning and providing explanations to reach mutual agreement (Chen et al., 2016).

Following Eldstål-Ahrens (2024), we consider that a dialogical perspective on argumentation acknowledges the context, the roles of the arguers and the meaning created between them. Thus, in this study, argumentation refers to a dialogical and joint process between pupils constructing negotiations in the classroom by presenting questions and making argumentative moves during group work to reach sufficient agreement to proceed with learning activities.

During collaborative interaction between students, any contradiction can induce argumentative discourse, creating a need for consensus-building, negotiation and constructing questions and explanations to justify their viewpoints (Chin & Osborne, 2010). Governor et al. (2021) found that more questions are presented in negotiations that achieve a consensus than in those that do not. Questions are a key component of discursive interaction in sustained dialogue, as they can be used to challenge the views of the speaker or justify one's own viewpoints (Chin & Osborne, 2010). Constructing and sharing arguments engages students in improving their decision-making skills (Nam & Chen, 2017). In addition, engagement in collaborative argumentation on important issues and contested values can enhance learning reasoning, reflection and critical thinking (Andriessen & Baker, 2014).

In HE classrooms, previous studies have highlighted the importance of researching various interactions, including questions posed by students, disturbances and teachers' tool use in multicultural HE classrooms (Venäläinen, 2010), group work (Lindblom et al., 2016a; Lindblom et al., 2025), students' interthinking (Taar, 2017) and students' decision-making during food preparation (Gelinder et al., 2020). However, little is known about negotiations and argumentation in HE education. Even if negotiation and argumentation skills are not stated in the national curriculums, they are essential elements in HE education due to collaboration, group work and process-oriented learning approach (see Lindblom et al., 2025). This study contributes to the literature on interaction in the HE classroom by highlighting how questions and dialogical argumentation construct negotiations and by raising pupils as active learners through the informal, social curriculum. Educational research on argumentation has mainly focused on science classrooms (e.g. Governor et al., 2021; Nam & Chen, 2017; Park, 2016), as argumentation is recognised as an essential goal and core practice in science education (see Nam & Chen, 2017). Eldstål-Ahrens's (2024) study emphasized the importance of researching pupils' argumentative participation and tasks in primary school, but HE education remains under-researched.

The overall purpose of this study is to explore spontaneous negotiations between pupils in an HE classroom, especially how they use questions and argumentation in decision-making and problem-solving to proceed with joint learning activities. Thus, our research questions are as follows:

RQ1: What is negotiated between pupils during HE classroom activities?

RQ2: How are negotiations constructed through dialogical argumentation?

Methodology

Research Context and Participants

This qualitative case study (Yin, 2018) was conducted at a lower secondary school in the metropolitan area of Helsinki, Finland to capture the complexities of simultaneous social interactions. The case in this study was an HE classroom. Compulsory HE is primarily taught in 7th grade (for all genders) and typically involves three hours of classes per week. It can also be an elective subject in 8th and 9th grades as well as in primary school depending on the local curriculum. The FNCC (2014) states the objectives, main content areas and criteria for the assessment of HE; however, teachers have considerable autonomy in terms of pedagogical decisions and methods. The participants (n = 18) comprised 7th grade pupils (13–14 years old) from three different study groups (n = 7, n = 4 and n = 7). Pupils participated in lessons once a week and had approximately seven months of experience studying HE. The observed lessons were each scheduled for 135 minutes (3 × 45 minutes). During practical learning activities, pupils worked in kitchen units in groups of three or four. Usually, the teacher grouped the pupils into working groups and rotated them regularly during the semester, but in this study, the division was based on the research consent of pupils.

Videography

According to the principles of classroom ethnography, there is a need to make habitual and familiar actions visible in order to see them because habit sometimes makes daily classroom practices invisible to teachers (Erickson, 2010). To capture simultaneous interactions between pupils, the data were collected through video recordings by the first author between March and May 2022. Previous research (e.g. Beinert et al., 2021; Berg et al., 2019; Lindblom et al., 2016a, 2016b; Venäläinen, 2010) has shown the significance of video data, as it reveals hidden and unconscious practices, especially in HE lessons that are strongly characterised by collaboration and simultaneous classroom activities (see Heath et al., 2010; Knoblauch et al., 2014). In addition, due to various opportunities for movement and the use of artefacts in HE, videography is a good method of capturing events that unfold quickly (Bohm & Lindblom, 2024).

A total of ten lessons were video recorded. The first author was responsible for setting up the cameras in the classroom before the lessons began. To capture pupil–pupil interactions in the kitchen unit, one camera was mounted on a tripod on top of a kitchen cabinet. Another camera was positioned at the back of the classroom to record teacher-led learning. The researcher was present during every lesson and adjusted the camera angle to ensure that pupils without consent would not be recorded. In line with Bohm and Lindblom's (2024) suggestion, the researcher observed the classroom, complemented the video data with field notes and visited the classroom beforehand to plan the camera positions. We also considered important to participate in some lessons before doing any recording to become familiar to the pupils and establish trust.

Data analysis

To analyse what was negotiated and how negotiations were constructed between pupils during group work, the data analysis was conducted by the first author in several phases. Between the phases, interpretations were shared with the two other researchers, and joint critical discussions were held about the analysis and how to proceed.

Lessons primarily began with teacher-led situations, with the teacher introducing the theme of the lesson and learning activities, teaching the important content knowledge and examining the recipes with the pupils. The pupils were then divided into groups; they started working in the kitchen units and ate the prepared food together. A total of 25 hours of video recordings were observed. Out of this data, 15 hours were included for further analysis. The data showing pupil–pupil interactions during practical learning activities were observed again, and units with bad audio quality were excluded from the dataset, resulting 13 hours of video data. Next, the data were analysed focusing on identifying negotiations, that is, spontaneous decision-making or problem-solving situations between pupils during food preparation. In previous HE studies related to decision-making, Gelinder et al. (2020) used the concept of 'gaps' to refer to problematic situations that cause students to stop working and need to decide how to proceed and the concept of 'relations' to analyse the suggestions, reasoning and arguments involved in reaching such decisions. Taar (2017) referred to gap-closing process, when critical moments expressed as questions, reconsiderations and confusions caused students to react and decide how to continue while engaged in group work.

Forty-two episodes identified as negotiations were arranged in a table, including the duration, participants and verbatim transcriptions, which included utterances and, to some extent, body movements, gestures and materials. To identify what was negotiated (RQ1), we conducted detailed video observations and thematic content analysis. Episodes were renamed meaning units, which were condensed and coded as a guiding question (condensed meaning unit) based on the issue of negotiations and further categorised as sub-themes and main themes (see Graneheim & Lundman, 2004).

Next, to determine how negotiations were constructed through dialogical argumentation (RQ2), interpretive content analysis was used. The structure of the negotiations corresponded to Walton's (2009) three stages of negotiation dialogue: opening, argumentation and closing. We developed a coding scheme to support our analysis, applying the concepts of Nam and Chen (2017) concerning social negotiation patterns and Larrain et al.'s (2020) coding scheme for peer group work argumentation and questions. Negotiations were analysed using a coding scheme (Table 1) that included three types of questions (gap, argumentative and justificative) and seven argumentative moves (cf. van Eemeren et al., 2015): proposing, supporting, recognising, clarifying, challenging, rejecting and defending.

Table 1 Coding for argumentation, definitions and quotations from data

Codes	Definitions	Examples
Questions		
1) Gap Questions	Questions asked when encountering a problem, conflict or decision-making situation	So, what are we doing now? Can you help? Do I put that one or what?
2) Argumentative questions	Questions inviting others to agree or disagree	Daniel, isn't this beautiful? I will prepare the cake. Is that okay?
3) Justificative questions	Questions asked to request reasons or justifications	Why did you do that? Why should we stop?
Argumentative Moves		
4) Proposing	Presenting a new idea, suggestion or explanation to solve a situational problem	Topi, since you have nothing to do, you could wipe. I can do something else.
5) Supporting	Accepting or agreeing with someone else's idea or claim	Okay, let's add it. Yes, chilli tastes good.
6) Recognising	Acknowledging and realising the existence of factors affecting the current situation or problem	And it cannot be too cold, it will dry. Look how thick. Well, I suppose it doesn't affect taste.
7) Clarifying	Presenting an explanation or an example to clarify the idea or suggestion	Mustard is better than soya sauce. I think I will use milk because it has an effect on colour.
8) Challenging	Criticising others' ideas or arguments	I want to do it myself. Yes, I know. I'm not stupid. Leave me alone.
9) Rejecting	Disagreeing with all or part of others' ideas	No, not yet! Not yet! I don't like mustard, don't add it.
10) Defending	Providing an alternative idea that differs from or conflicts with others' ideas	Caramel is the best. I do the salad. I do the salad.

Ethical Considerations

This study followed the ethical principles of the Finnish Advisory Board on Research Integrity (2019). The study was approved by the school principal and the city's department of education. To ensure that the participants understood the purpose of the research, oral and written informed consent was obtained from the pupils and teacher before data collection. Due to the age of pupils (under 15 years old), their guardians were asked to provide written informed consent (electronically and on paper). Both pupil's and his/her guardian's consent were needed to include the pupil in the study. Although the pupils responded positively to the presence of cameras, they were informed that they had the right to refuse not to participate and withdraw

from the research at any stage. In addition, the researcher was present during data collection and pupils had a chance to ask questions concerning video recordings and the research in general.

Findings

Negotiating food preparation, group work roles and aesthetics

For the findings pertaining to RQ1, that is, what is negotiated during HE lesson's learning activities, three issues were identified: food preparation (Theme I), roles in the group (Theme II) and aesthetics (Theme III). Table 2 presents the three themes and six sub-themes. A condensed meaning unit (guiding question) represents an interpretation of the decision to make or problem to solve to proceed with activities, that is, what characterised the issues of negotiations.

Table 2 Themes and condensed meaning units of negotiations

Themes of Negotiation	Number of meaning units	Examples of condensed meaning units
I. Food Preparation	15	
1. Cooking Methods		How to fill the cake?
2. Cooking Utensils		Which frying pan do we choose?
II. Roles in the Group	14	
3. Division of work		Who can peel the carrot?
4. Power Dynamics		Who can talk and with whom?
III. Aesthetics	13	
5. Taste		Is there enough spice in the soup?
6. Visuality		Does the cake look fine?
	n=42	

Food Preparation

Negotiations concerning food preparation were characterised by feelings of uncertainty and pupils' need for peer support, which triggered collaborative decision-making. Food preparation comprised two sub-themes: cooking methods and the use of cooking utensils. The most predominant sub-theme of all the negotiations pertained to cooking methods (Sub-theme 1), including guiding questions linked to timing, ingredient amounts, food choices and methods. Timing was negotiated when pupils needed support regarding when to add ingredients, such as when to add thickener to a vanilla fool or oil to a pan. Decision-making about the right amount of ingredients manifested as questions, such as how much chilli to add to a soup or how much flour to add to a sauce. Negotiations concerning food choices or methods were rather problem-solving situations (e.g. how to fill a cake or start preparing a berry fool). Pupils were also uncertain when choosing cooking utensils (Sub-theme 2) and sought other pupils' opinions or support.

Roles in the Group

Negotiations concerning roles in the group were connected to the division of work and power dynamics. Besides cooking methods, division of work (Sub-theme 3) was the predominant theme in the negotiations. When pupils began the kitchen activities together in a group, they had the

autonomy to make decisions about how to divide the given food preparation tasks, which triggered negotiations. During food preparation, negotiations were more specific (e.g. who will peel the carrot or who will make the cake). Only a few negotiations emerged related to washing the dishes and cleaning the kitchen because those tasks were assigned by the teacher. Power dynamics (Sub-theme 4) refers to negotiations connected to social connections, control and influencing others' behaviour. Pupils negotiated issues such as who can sit where at the dining table, who can talk to whom and the possibility of calming down and concentrating on their work.

Aesthetics

Negotiations concerning aesthetics were characterised by the need for opinions and differences of opinion. During food preparation, pupils negotiated the taste of the food (Sub-theme 5)—e.g. whether the mustard tastes good and whether there are enough spices in the soup. Food preparation also triggered negotiations not linked to the task at hand (e.g. which cakes taste delicious in general). More frequently than taste, negotiations concerning aesthetics pertained to the visuality (Sub-theme 6) of the food or table setting. When pupils were uncertain and needed an opinion on the visuality of the food, they negotiated for example whether the pastry looks right, whether the fried fish is too dark and how the bread or fool should look when it is ready. In addition, the visuality of the food was connected to food preparation such as how to decorate the cake attractively and how to pipe the cream beautifully. Visuality linked to table setting concerned what to place on the table and where to place everything such that it looked good and correct.

Types of questions and argumentative moves

Negotiations between pupils were constructed in multiple ways throughout all the analysed questions and argumentative moves. However, gap questions—which indicated when pupils were uncertain about how to proceed, sought an opinion or encountered a problem or conflict—were the most frequent questions. Typically, gap questions triggered negotiations, but they also emerged during negotiations, especially if the other pupil was also uncertain or the task had multiple phases. Argumentative questions were typically posed when pupils invited others to agree or disagree, and justificative questions were posed to request reasons or justifications.

Dialogical argumentation was characterised by seven argumentative moves that constructed the negotiations: supporting, recognising, clarifying, proposing, challenging, rejecting and defending. The six excerpts shown below represent an interpretation of dialogical argumentation and illustrate in detail what was negotiated. They include verbal utterances and some essential embodied actions (enclosed in square brackets). The excerpts were translated from Finnish to English with the intention of keeping the original expression as similar as possible. The participants were given pseudonyms. The numbers at the top left indicate the durations of the meaning units.

Excerpt 1 Negotiating Cooking Methods

0:45	Eino:	Lauri, could you help me a little?
	Lauri:	What?
	Eino:	Can you help? Do I add, well, that one or what? [points at a bottle of cooking oil]
	Lauri:	I'm not sure. Yeah, well, if you fry, so…
	Eino:	Can you add that? Or maybe not yet, or I don't know?
	Lauri:	Yeah. Well, if you start to heat it…
	Eino:	Now it is heating.
	Lauri:	Oh. [pours cooking oil into the pan]

In Excerpt 1, Eino is uncertain about how to fry fish and as an opening move asks if Lauri could help (gap question). He repeats the question and continues asking what cooking oil he should add (gap question). In the argumentation stage, Lauri is also uncertain, but he confirms that this is the right choice (supporting). Eino is still uncertain, asks if Lauri could add the cooking oil and continues hesitating when it should be added (gap question). Lauri agrees to add the oil (supporting) on the condition that Eino begins to warm the pan (proposing). In the closing stage, Eino explains that it is already warming (clarifying).

In Excerpt 2, two pupils work in their own kitchen units. The food preparation of meatballs stops because they must decide whether to use water or milk in the mixture. Both read the food recipe. In the opening stage, Jacob cannot decide and asks Anton's opinion (gap question). Anton is also uncertain and does not answer. An argumentation stage is constructed from a variety of questions and argumentative moves. First, Jacob repeats the question and asks Anton to make a decision (gap question). Anton is uncertain, but then decides hesitating, to use milk and explains the decision (clarifying). Jacob still asks the reason for the decision (justificative question). Anton repeats the explanation (clarifying), which confuses Jacob, and he gives a new idea and suggests water (proposing). Anton changes his mind and agrees (supporting). The teacher hears their discussion and clarifies the effect of the milk in the mixture. Then, as a closing move, Jacob suggests milk again (proposing) and they continue preparing the mixture.

Excerpt 2 Negotiating Cooking Methods

1:50	Jacob:	Anton? Do you use water or milk? Do you get it? Water or milk? [Both lean close to the table, look under the shelf at each other. Anton waves the book. Jacob starts putting the cutlery in the box.]
	Jacob:	Anton, look, I don't get it. Which one do you use?
	Anton:	[leans down to look at the book] I will use, well...
	Jacob:	[walks into Anton's kitchen]
	Anton:	I will probably use milk; it affects the colour.
	Jacob:	[goes back to his kitchen] What? Why?
	Anton:	Because milk affects the colour.
	Jacob:	So, water?
	Anton:	Yes, I probably use water too. [The teacher overhears the conversation and says, 'So it gets browner if you use milk.']
	Jacob:	So, milk?

In Excerpt 3, Kaya and Selena prepare sausage sauce. Kaya reads the recipe and talks to herself, saying that, next, she must add mustard. Topi overhears the word 'mustard' (opening stage) and asks Kaya if there will be mustard in the sauce (gap question). Kaya ignores the question

and poses a counter-question about measuring spoons due to her uncertainty (gap question). Topi agrees that the spoon is correct (supporting). The argumentation stage related to taste begins when Kaya adds mustard to the sauce. Selena notices this and shows her disgust with mustard and requests not to add it (rejecting). Topi criticises Selena's argument (challenging). Then, he strengthens his argument by asserting that mustard is better than soya sauce (clarifying). As a closing move, Selena shows her disagreement by expressing disgust (rejecting).

Excerpt 3 Negotiating Taste

0:35	Kaya:	[takes the book] Where are we? We were… hmm… [reads aloud] Mustard, mustard… [picks up a measuring set]
	Topi:	[comes next to Kaya] Mustard, will there be mustard in it?
	Kaya:	Is this a teaspoon?
	Topi:	Yeah, it's a teaspoon.
	Kaya:	Yeah, thanks. [adds more mustard to a spoon and then adds it to the sausage sauce]
	Selena:	I don't like mustard; please, don't add it.
	Topi:	You don't even taste it; there must be mustard. Mustard is better than soya sauce.
	Selena:	Yuck!

Instead of opening negotiations by posing question, sometimes proposals were used. In Excerpt 4, pupils begin to work in the kitchen, and they must decide how to divide the given tasks. Negotiation begins when Aapo states twice that he wants to prepare the salad (proposing). Topi criticises by stating that salad will be prepared last (challenging), which starts the argumentative stage. Aapo is very determined and repeats his suggestion multiple times, trying to persuade others to accept it (defending). Kaya gives a new idea to solve the problem by suggesting that they will make the sausage sauce (proposing). Aapo continues repeating his suggestion (defending). Topi accepts by summarising the division of work (supporting), after which Aapo confirms the agreement (supporting). Kaya wants to ensure agreement (argumentative question), and as a closing move, Aapo repeats Topi's suggestion (supporting). In this excerpt, Aapo's argumentative moves could be interpreted as statements rather than collaborative suggestions.

Excerpt 4 Negotiating Division of Work

1:15	Aapo:	I want to prepare a salad. I only make a salad.
	Topi:	But a salad is prepared at the very end.
	Aapo:	[repeats several times] I prepare a salad. [goes to the teacher's desk and continues to repeat] I prepare a salad. [comes back to his kitchen and repeats again] I prepare a salad.
	Kaya:	We make a sausage sauce. We make a sausage sauce.
	Aapo:	I prepare a salad. [raises his hand in the air]
	Topi:	You prepare a sausage sauce [speaking to Selena and Kaya], Aapo makes a salad and I cook spaghetti.
	Selena:	[claps her hands]
	Aapo:	I prepare a salad.
	Kaya:	We prepare a sausage sauce, right?
	Aapo:	Topi cooks pasta, and I prepare a salad.

Proposing as an argumentative move also appeared in a more sophisticated and collaborative way in the negotiations (Excerpt 5). Two pupils have prepared a cake and already decorated it with the berries. Next, they must pipe the cream. Annika opens the dialogue by noting the

visuality of the cake (recognising). Elisa acknowledges that piping is a difficult task and feels nervous (recognising), after which Annika agrees (supporting) and asks how they should do it (gap question). She extends the question by inviting Elisa to agree with the suggestion (argumentative question). Elisa disagrees by making a counter-suggestion (proposing), but Annika disagrees (rejecting) and explains that she wants to decorate the cake such that it looks as good as possible (clarifying). Elisa is unsure how to proceed and proposes an alternative suggestion (argumentative question). Likewise, Annika is uncertain and turns to a cookery book, after which she criticises Elisa's suggestion by comparing it with a photo of a cake (challenging). Elisa offers a new explanation (proposing), which Annika understands and accepts (supporting). Even though many counterarguments were presented, the argumentation stage in this negotiation can be interpreted as collaborative and constructive. In the closing stage, Elisa starts to pipe the cream, after which Annika offers yet another suggestion (proposing) while Elisa continues piping.

Excerpt 5 Negotiating Visuality

1:25	Annika:	Actually, this is really beautiful.
	Elisa:	It's just that I always feel nervous of the cake's sides. [holds the piping bag]
	Annika:	Yeah. How do we do it? Do you put the cream at different spots and I just smooth?
	Elisa:	I was thinking that we just pipe the cream like this, one by one.
	Annika:	Well, I don't know. I am just thinking how it would look the most beautiful. You know?
	Elisa:	Well, should we coat these? If we smooth these and then these?
	Annika:	[leans down to look at the recipe and photo of the cake in the book] Here, look, it doesn't go like that.
	Elisa:	I'm thinking, well, like this. That we don't smooth the icing on a cake. So that we don't smooth. [points to a picture in the book]
	Annika:	Ah, okay!
	Elisa:	[begins to pipe the cream on the cake]
	Annika:	Leave that... First here and then pipe over. [points to the cake's sides]

Negotiations are also triggered in situations that could be interpreted as conflicts rather than decision-making or problem-solving situations. These negotiations were characterised by power dynamics within the group involved in the control and the need to influence another's behaviour. In Excerpt 6, conflict emerges between three pupils while two pupils cook, and the third one is provoked by the others' reactions. Selena fries minced meat in a pan, and oil splatters a little. She exaggerates her reaction and squeals (recognising), indicating that she is afraid (opening stage). Kaya stands next to her and joins in the exaggerated reaction by squealing (supporting). Topi gets provoked and criticises the reaction by repeating Selena's name multiple times (challenging), which annoys Selena and leads to reciprocal criticising (challenging). Additionally, Topi strengthens his argument by providing an explanation (clarifying). He then whispers something to Kaya, which triggers her to criticise Topi (challenging). Both agree and reinforce the claim (supporting). Selena is uncertain how to proceed with the cooking and asks Topi what to do (gap question). Kaya reacts to the question with a hidden meaning of disagreement (rejecting), saying that Selena should not talk with Topi. Despite this, Topi moves next to Selena and suggests how to stir the meat (proposing). Selena criticises Topi's action by telling him that he must go away and strengthens the order with a rule regarding a 'girls' zone' (challenging). Topi specifies the conflict by asking where the line is (gap question), and Kaya gives an explanation (clarifying). As a closing move, Topi expresses his familiarity with the situation (recognising).

Excerpt 6 Negotiating Power Dynamics

1:25	Selena:	[fries minced meat in a frying pan, the oil splatters a little and she holds the lid in front of her for protection, trying to stir at the same time] Eek, I'm scared!
	Kaya:	Eek! [squeals next to Selena]
	Topi:	[turns to look from the other side of the kitchen] Selena. Selena, Selena. Selena.
	Selena:	Stop it.
	Topi:	You stop it. That lid is not your shield.
	Selena:	[continues stirring the meat]
	[Topi and Kaya turn to look at each other]	
	Topi:	[whispers something to Kaya]
	Kaya:	Shhhh. You are a troll. I don't even know you.
	Topi:	Me neither.
	Kaya:	Likewise.
	Selena:	[turns towards Topi and stops stirring the minced meat] Well, what should I do?
	Kaya:	Selena, you are talking to some random boy.
	Topi:	[comes next to Selena and grabs the spatula] You stir it like this.
	Selena:	Go away. This is a girls' zone. [draws an imaginary line with her hand on the floor]
	Topi:	Where is the line?
	Kaya:	The line goes here. [shows with her hand on the floor]
	Topi:	I have seen a prophecy. I can predict this. I'm having déjà vu.

Discussion

The aim of this study was to make visible and understand the informal and spontaneous negotiations between pupils in the HE classroom and examine what is negotiated and how negotiations are constructed through argumentation. Our findings show that the HE classroom as a learning space invites pupils to negotiate together and that a variety of negotiations are used to deal with different issues, such as cooking methods, the taste of food and the roles of group members, during hands-on activities (RQ1). The micro-level analysis highlighted the construction of dialogical argumentation and negotiations as a multifaceted process consisting of different questions and argumentative moves. Negotiating involved presenting questions and argumentative moves such as proposing, recognising, supporting, rejecting, clarifying, challenging and defending.

The most frequent issue in negotiations concerned food preparation, which was characterised by feelings of uncertainty and pupils' need for peer support in relation to cooking methods. In line with our results, a previous study concerning group work in the HE classroom (Lindblom et al., 2016a) showed that when group work was integrated, pupils discussed cooking methods, recipes and division of work to solve learning tasks collaboratively. Although integrated group work was present in our study, the video analysis revealed that group work did not automatically entail collaborative and integrated work, as pupils also frequently worked independently.

One of the goals of HE education in Finland is to encourage pupils to take aesthetics into account (FNCC, 2014). In our study, aesthetics was an essential part of the learning situations, as pupils negotiated the taste and visuality of food and the visuality of table settings. In line with Gelinder et al. (2020) and Berg et al. (2019), our findings demonstrate the importance of

taste in food preparation in HE lessons. Although definitions of taste vary across disciplines (Christensen & Wistoft, 2016), taste can refer to the sense in the mouth and to aesthetic preferences (Gelinder et al., 2020). This was apparent in the negotiations, which were characterised by the seeking of opinions regarding the taste of food and differences of opinion. Pupils tasted the food and sought opinions (e.g. about whether there were enough spices in the soup) and expressed opposing opinions (e.g. about which cakes are the most delicious). Likewise, Berg et al. (2019) demonstrated how students use aesthetic judgements such as taste as an argument when they negotiated choice of ingredients during cooking. Christensen and Wistoft (2016) suggest that teachers need to include taste as a didactic element. Furthermore, it is essential to understand how aesthetic judgements participate in learning, especially in HE classes related to food preparation (Gelinder et al., 2020).

Negotiations in the classroom are affected by contextual (i.e. physical and temporal) conditions (Frelin & Grannäs, 2010). The HE classroom as a learning space triggered spontaneous negotiations related to various issues. Joint food preparation and a wide range of hands-on activities led pupils to negotiate not only food-related issues but also group members' roles related to the division of work. This is in line with the FNCC of HE, which states that one of the goals is to guide students in negotiating the division of work and use of time (see FNCC, 2014). Although the use of time did not appear to be an issue in the negotiations in this case study, time frames may have affected the pupils we studied, since they were unsure and had disagreements, which triggered negotiations. The importance of finishing the given tasks on time in HE lessons can affect pupils in the forms of stress, disagreement and insecurity during cooking activities (Lindblom et al., 2016b). Although negotiations play an important role in everyday classroom activities, not everything is negotiable; limiting what is negotiable can foster pupils' feelings of security but then again exclude them from the communication process (Frelin & Grannäs, 2010). Nevertheless, teachers should encourage pupils to engage in collaborative argumentation during group work and value pupils' autonomy in decision-making and problem-solving, which enables joint negotiations.

Negotiations were constructed through dialogical argumentation via questions and argumentative moves (RQ2). In most meaning units, gap questions and proposals triggered the negotiations and the use of argumentative and justificative questions complemented the dialogue and helped the pupils proceed in the negotiation. In line with the findings of Venäläinen (2010), our video analysis revealed that practical hands-on learning activities in the HE classroom triggered more questions than teacher-led learning situations. While students solve different tasks in HE lessons, critical moments become apparent through students' questions and confusion—when they must decide how to proceed as a group (Taar, 2017). Likewise, decision-making situations were characterised by uncertainty or opinion seeking, triggering pupils to pose questions or make proposals. Besides questions, negotiations are constructed of multiple argumentative moves, such as proposing, justifying, rejecting and challenging. Following Chen and Steenhoek (2013), we suggest that constructive negotiating in the classroom involves encouraging others to join the discussion by presenting questions, providing evidence for claims or ideas, challenging by proposing or making counterarguments with clarification and listening to and supporting others' ideas. Negotiations actualise jointly and dialogically, and negotiation skills are learned collaboratively.

Argumentation (i.e. expressing opinions and justifying them) is a type of discourse that needs to be learned to participate in democratic societies (Eldstål-Ahrens, 2024). Within the educational sciences, two perspectives concentrate on the main epistemic outcomes of educational argumentation: learning to argue and arguing to learn. In practice, these perspectives intermingle, as they are pedagogical objectives and outcomes of learning interactions (see, e.g. Andriessen & Baker, 2014; Rapanta & Christodoulou, 2022.) Learning to argue focuses on the development of argumentation skills, such as the construction of valid arguments and counterarguments, justification, rebuttals and adequate replies (Kuhn, 2005; Rapanta & Christodoulou, 2022). By contrast, arguing to learn refers to a collaborative process of collective knowledge building when the main intention is not to convince each other but to engage in 'cooperative explorations of a dialogical space of solutions to problems and fundamental concepts underlying them' (Andriessen & Baker, 2014, 442).

Since pupils' expressions are not always visible in their body language, teacher's reflections should not be grounded only by 'scanning' the classroom (Lindblom et al., 2016b). By making negotiations visible and identifying micro-level dialogues and argumentation in practice, this study can enhance teachers' understanding of everyday classroom talk and value it as a productive discourse. Joint hands-on learning activities and group-based learning seem to promote spontaneous negotiations between peers. However, since HE typically involves group work, high-quality collaborative communication needs to be taught for example providing problem-solving tasks (Lindblom et al., 2025). This study's findings enhance our understanding of negotiating and argumentation as classroom practices. This can promote teachers create a learning environment that Lilja (2012) describes as a 'communicative ecology of negotiation', which both demands and creates space for negotiation, argumentation and meaning-making. Through co-constructing in-between spaces that build on informal interaction (see Frelin & Grannäs, 2010), teachers and pupils can create inter-subjective negotiations and opportunities for learning to argue.

However, it can be challenging for teachers to design and provide student-activating tasks in which dialogue, discussion and constructive argumentation are central (Beinert et al., 2021). Our findings demonstrate that even if interaction and collaboration skills are not included in the national curriculums beyond Finland, HE offers a natural context to develop negotiation skills simultaneously with practical learning activities. In line with our findings, Chin and Osborne (2010) emphasise the importance of scaffolding student questioning to support productive discourse. Additionally, to foster productive negotiations in the classrooms, not only in the HE classrooms, we suggest for the teachers:

- to scaffold pupils' joint decision-making and problem-solving with each other by valuing their agency
- to encourage pupils to express proposals, counterarguments and to justify them during group work
- to value hands-on learning activities as a collaborative and dialogical process

Although videography offers a detailed view of natural classroom interactions and highlights simultaneous and versatile interactions between pupils, it has some limitations. Recording quality is crucial, so good camera positions and careful planning are essential to capturing relevant data and clear sound recordings. Some of the data had to be excluded due to background noise or pupils' quiet or overlapping speech. In addition, during the first few video

recordings, some COVID-19 recommendations were still in place, and the use of masks influenced sound quality to some extent. The presence of the researcher or video camera may have affected the pupils' behaviour. Although the researcher was present during several lessons before recording anything, observing at the back of the classroom, the camera was not moved and was positioned several metres away from the pupils. We suggest that future studies should be undertaken to explore the implementation of dialogical argumentation as a pedagogical method and how teachers can facilitate and support the development of students' negotiation skills. In addition, examining interaction from multimodal perspective where embodied communication is equally crucial to collaboration than language, could broaden our understanding of negotiations in the classrooms.

Conclusion

This study extends previous research related to interaction and collaboration in HE classrooms by exploring how negotiations are constructed between pupils. Our findings show that, in addition to practical food preparation skills, food-related learning triggers pupils to practice other important skills, such as decision-making, critical thinking and negotiation skills. The HE classroom is not only a natural environment for learning skills needed in daily life but also an environment of spontaneous negotiations between pupils. Although the results showed that pupils are active learners through the social curriculum, negotiation skills need to be taught. Changing established classroom practices requires teachers to value collaboration skills and understand the potential of food-related learning from a wider viewpoint. By encouraging pupils to engage in collaborative argumentation through questions, proposals and counterarguments, teachers can create a discursive learning environment that facilitates the development of essential 21st century skills.

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PEER-REVIEWED PAPER

Headteachers' Knowledge, Perceptions and Prioritization of the School Subject Food and Health in Grades 1–4 in Norway

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Abstract

The purpose of this study was to investigate headteachers' knowledge and perceptions of the school subject Food and Health (FH), and how they prioritize it in grades 1–4. To gain insight into headteachers' knowledge, perceptions and priorities, semistructured interviews were carried out with headteachers from eight schools in four main regions of Norway. Data were analysed using conventional content analysis.

The results showed that most headteachers saw few challenges related to teaching FH in the lower primary level. They seemed to have little interest in FH and gave class teachers much freedom in designing, planning, and carrying out their teaching. The perceived importance of FH in grades 1–4 varied based on headteachers' own interest, competence, and values. This may lead to undesired variation in quality and number of lessons in FH in grades 1–4 and should be followed up by clearer guidelines and expectations from national education authorities.

KEYWORDS: **FOOD AND HEALTH, HOME ECONOMICS, HEADTEACHER, PRIMARY SCHOOL, CURRICULUM**

Introduction

Schools are considered the best place for food and nutrition education (Food and Agriculture Organization [FAO], 2019; World Health Organization [WHO], 2004, 2006), and childhood is a crucial period when eating habits that persist into adulthood are formed (Ares et al., 2024; Mikkilä et al., 2005; Smith et al., 2022; WHO, 2006). Patton and et al. (2018) assert that investing in adolescents' (10–24 years) healthy diets and creating opportunities for adolescents and their families to make healthy choices, will yield large benefits for current and future generations alike.

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Lavelle et al. (2016) have reported on the importance of learning cooking skills at an early age for skill retention, confidence, cooking practices, cooking attitude and diet quality. In the same vein, Lichtenstein and Ludwig (2010) claim that providing a mandatory food preparation curriculum in schools may be among the best investments societies could make: educating students comprehensively about the scientific and practical aspects related to food will provide them with the skills they need to choose, handle and prepare food with confidence. Home Economics education has also been associated with higher levels of food knowledge among several age groups (Worsley et al., 2016).

In Norway, children start primary school at the age of six. The first ten years of schooling is compulsory, consisting of primary and lower secondary school education, which is based on a single, national curriculum (Ministry of Education and Research, 2023). Subjects, subjects' curricula, and number of teaching hours in each subject are decided with a common, legislative framework (Eurydice, 2025). The specific curricula have the status of regulations (Ministry of Education and Research, 2019a) and are therefore legally binding for school owners (i.e. the municipalities) and schools alike (Holthe & Veka, 2019). The County School Governors are responsible for supervision and counselling of all schools on behalf of the national school authorities (Eurydice, 2023, 2025).

95% of all Norwegian children attend public schools (The Norwegian Directorate for Education and Training, 2022), which are administered by the municipalities and free of charge (Norwegian Directorate for Higher Education and Skills, n.d.). Hence, the Norwegian primary school system lays a good foundation for establishing healthy eating habits in children, if the schools provide proper food education.

Home Economics (HE) has been a compulsory subject in Norwegian schools since 1959. In 2006, the subject was revised and renamed "Food and Health" (FH). According to the national FH curriculum, the subject has three core elements: healthy diets, sustainable food habits and consumption, and food and meals as an expression of identity and culture. The subject is practical, with an emphasis on preparing meals and cooking healthy, safe and sustainable foods (Ministry of Education and Research, 2019a). In addition, students should understand the association between diet and health, critically assess health claims and other information about food and diet, and they should be able to develop their creativity by exploring and using their senses in practical activities (Djupegot et al., 2023). Hence, FH covers the food, nutrition and health part of the broader HE subject, as well as parts of consumer science.

The total number of teaching hours in FH is set to 197 in grades 1–10 (The Norwegian Directorate for Education and Training, n.d.), and. the FH curriculum contains competence aims after years 4, 7 and 10. These describe what the students should master at the various levels. Hence, students have the right to develop competence as expressed in the subject curriculum, regardless of where in the country they attend school (The Norwegian Directorate for Education and Training, 2019, p. 11). Nevertheless, previous research has shown that FH teachers in Norway often base their teaching on their own perceptions rather than the formal, statutory curriculum (Veka et al., 2020). Ask et al. (2020) also reported that many of the FH teachers in grades 1–4 called for better framework factors in the subject, including dedicated, scheduled lectures in FH on the timetable for grades 1–4.

Norwegian Headteachers' Duties and Responsibilities

School leaders are responsible for the school's operation, and headteachers have overall responsibility for their school, including pedagogical, personnel, and administrative management (Eurydice, 2023). The headteacher must organize the school in accordance with the students' right to attend school and in line with their rights regarding the content of primary and lower secondary education (The Education Act, 1998, Chapter 2, Section 2–3). Further, the headteacher is responsible for high quality in education, for students' learning results, the school environment, and for facilitating sound learning processes at school (The Norwegian Directorate for Education and Training, 2025).

School leadership implies to provide direction for the teachers in their job. Hence, headteachers may play a decisive role in school development (Helleve & Eide, 2020). Already at the turn of the millennium, Moos and Carney (2000) pointed out that educational leadership was a central element of headteachers' work, including both leading the students' educational processes (i.e. their learning) and responsibility for teachers' development of professional skills and reflexivity (Helleve & Eide, 2020, p. 200). According to several studies (see for instance Coelli & Green, 2012; Pont et al., 2008), school leaders can make a difference in school and student performance, provided they are granted autonomy to make important decisions. As Masters (2008, p. 41) pointed out: "School leadership has been identified as being second only to classroom teaching in its potential to influence student learning."

Robinson et al. (2008) have highlighted the following leadership dimensions as important for student outcomes: establishing goals and expectations; resourcing strategically; planning, coordinating and evaluating teaching and the curriculum; promoting and participating in teacher learning and development, and ensuring an orderly and supportive environment. Persson and Haraldsson (2017) also stressed that school managers have a large influence on what is prioritized in school, which in turn affects students' school performance. Hence, the perceived importance of a particular subject, and how headteachers prioritize limited resources—both financial and human—between different school subjects, may affect the quality of teaching in a subject as well as the students' learning outcomes.

In this study we therefore wanted to assess what headteachers know about the school subject FH, how they perceive FH and how they prioritize it. The study is part of the research project "Early efforts in the school subject Food and Health ", where the purpose was to gain insight into the teaching offered in FH in grades 1–4, and to shed light on variations and challenges that characterized today's teaching (Ask et al., 2020). As this is a field where relatively little research has been carried out (Beinert, 2021, p. 2), especially for the lower, primary level (Aadland et al., 2023), we wanted to obtain a better understanding of headteachers' perceptions of the importance of the school subject FH, their knowledge of the subject, how teaching of FH in grades 1–4 was implemented at their school, and their prioritization of the subject in lower, primary school.

Investigating headteachers' knowledge, perceptions, and prioritization of FH in the early years may be of international interest because it addresses a set of challenges shared by many education systems. Across the Nordic countries, HE/FH often struggle to secure sufficient time, resources, and legitimacy within school curricula dominated by academic core subjects (see for instance Bjørkkjær et al., 2023; Bohm, 2022). Understanding how school leaders interpret the purpose of FH and how they prioritize it within their local school structure can provide insight

into the mechanisms that shape the learning opportunities young students receive in this subject area. As pointed out by Pont et al. (2008), Coelli and Green (2012) and Masters (2008), headteachers' beliefs and priorities may strongly influence resource allocation, staffing decisions, and the overall status of a subject, factors that may affect teaching quality and student learning across educational systems. By documenting these leadership perspectives, this study may contribute insights relevant for countries seeking to strengthen food, nutrition, and health education in schools.

In recent years, several researchers have studied the planning and implementation of teaching FH in Norway (Beinert, 2021; Holthe & Veka, 2019; Lassen & Hjälmeskog, 2021; Veka & Djupegot, 2025; Veka et al., 2018, 2020) However, Borgen et al. (2023, p. 13–14) recently published an overview of previous research on the practical-aesthetic subjects (PAS—Arts and Crafts, Food and Health, Music, and Physical Education), where they concluded that both headteachers' and school owners' perspectives on PAS seemed to be absent. In the same vein, Veka and Djupegot (2025, p. 42; 44) underlined the lack of studies examining perspectives of students as well as school management in their systematic review of FH research in Norway 2006–2023. To the best of our knowledge, no one has previously examined how headteachers perceive the school subject FH, and how they prioritize it in lower primary school.

Materials and methods

Instrument Development and Ethical Considerations

To explore these issues more in depth, a qualitative design (Malterud, 2017; Postholm & Jacobsen, 2018, p. 95) was applied, and we prepared a semistructured interview guide consisting of four parts. The first part consisted of background information about the headteachers; their education, years of experience as headteachers, and teaching experience with FH. We also asked whether they had any formal competence in FH. The second part dealt with the framework factors for FH at the individual school (see Aadland et al., 2023; Ask et al., 2020; Helland et al., 2021, for details), including who was responsible for teaching FH in grades 1–4 at each school, and why this person was chosen. The third part of the interview revolved around teaching FH itself, e.g. content, teaching material, and collaboration with the local community in relation to teaching FH. In addition, we asked how FH teaching was prioritized and organized for grades 1–4. In the fourth part we asked which challenges the headteachers saw in implementing FH education in grades 1–4 in the future.

The research project was ethically reviewed and approved by the Norwegian Centre for Research Data prior to data collection (project number 59050). In line with ethical considerations, the headteachers participating in this study received written information about the project ahead of data collection, and all study participants provided written informed consent. They were also informed that study participation was voluntary, and that they could withdraw their contribution to the research project at any time without explanation. The general guidelines for research ethics provided by the Norwegian National Research Ethics Committees (2019) were followed throughout the research process. The protection of the participants' privacy included informed consent, confidentiality in data storage, and protection of participants' identities when sharing results and publications. Furthermore, no sensitive personal information was collected as part of this study.

Sample and Data Collection Procedures

In 2018, we contacted five universities covering the five different regions in Norway and asked for a list of primary schools used as practice schools in their teacher training courses. Schools were drawn from each list randomly by using Research Randomizer (RR; Urbaniak & Plous, 2018). The headteachers at the selected schools were contacted by phone and subsequently by email and asked if it were possible to interview teachers in grades 1–4 and the headteacher about FH. If the school refused, a new school was chosen with the help of RR. This was done until a total of 12 schools, evenly distributed across the country, had agreed to participate.

From four of the participating schools, we could not conduct interviews with the headteacher or a representative from the school management as the headteachers were busy. In total, we conducted interviews with nine headteachers at eight different schools in four regions in Norway. These schools were coded from A–H in data analysis. As two of the participants represented the same school, we chose to exclude the interview with the assistant headteacher at school A from further analysis. Each interview lasted 30 to 60 minutes. The interviews were recorded, and audio recordings were transcribed verbatim, except for names, as all data were anonymized during transcription.

Data Analysis

A conventional, thematic content analysis was carried out (Fauskanger & Mosvold, 2014), following Hsieh and Shannon's (2005, p. 1278) definition of qualitative content analysis as a "research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns". According to Hsieh and Shannon (2005), conventional content analysis is used in studies where the aim is to describe a phenomenon to obtain a better understanding of it. Knowledge generated from such a content analysis may be based on participants' unique perspectives and grounded in the actual data (Hsieh & Shannon, 2005, p. 1280) and was therefore considered an appropriate approach for exploring headteachers' subjective perceptions and priorities related to FH teaching in their schools.

The interviews were first transcribed verbatim, before the content was systematized manually in tables based on the various themes in the interview guide. Data were analysed and interpreted by all authors in collaboration, by categorizing the replies from the eight headteachers, based on the following themes:

1. Responsibility for teaching FH in grades 1–4 at this school
2. Number and duration of lessons given in FH at grades 1–4
3. Knowledge of competence aims for FH after year 4
4. Prioritizing teaching in FH in grades 1–4
5. Challenges related to implementing FH education in grades 1–4 in the future.

Results

Participants Demographics

Table 1 shows relevant characteristics of the headteachers interviewed in this study. Schools A and B are from Northern Norway, and C and D from Central Norway. Schools E–G represent Western Norway, whereas school H represents Eastern Norway.

Table 1 Gender, education, Headteacher experience, formal FH education and teaching experience in Food and Health (FH) among the Headteachers interviewed (*n* = 8)

Interviewee	Gender	Education	Headteacher Experience	Formal FH Education (credits)	Teaching Experience in Food and Health
Headteacher, School A	Female	General teacher education, Master in school management	One year	Yes (15 credits)	Yes, 3–4 years (grades 3 and 9)
Headteacher, School B	Male	General teacher education	7 years	Yes (15 credits)	Yes, one year (grade 3)
Department Manager, years 1–4, School C	Female	General teacher education, school management	9 years	Yes (15 credits)	No
Headteacher, School D	Male	General teacher education, school management	7 years	No	No, but done a bit of cooking in outside in connection to outdoor life
Headteacher, School E	Female	General teacher education, management training	4 years	No	No
Headteacher, School F	Male	General teacher education	25 years	No	No
Headteacher, School G	Female	General teacher education, school leader education	11 months	Not stated	Yes, three years (grade 6 and grades 8–10)
Deputy Headteacher, School H	Male	General teacher education	4 years	Not stated	Yes, one year, as assistant teacher (grade 6)

Responsibility for Teaching FH in Grades 1–4

Two of the headteachers said they were responsible for the teaching in FH, while the others stated that this was the class teacher's responsibility. Headteacher A said:

> Ultimately, I am the one responsible for all education

while headteacher D was the only one who did not really know who was responsible:

> No, it's probably the class teacher. Yes. Or the team, then, that has that subject, or the class, or the year. It comes more as part of the subject- and timetable-distribution…

The remaining headteachers had a good overview of who was responsible.

We also asked why these specific teachers were given the responsibility for teaching FH, and the replies varied. Only one of the headteachers mentioned formal qualification in FH as a reason, whereas several mentioned the subject- and timetable distribution, or that teaching FH was the responsibility of the class teachers, by definition. Headteacher A also referred to the relation the teacher had to the students, as a factor influencing the choice. One headteacher (F) mentioned that sometimes there were teachers with proper FH education who conducted teaching in FH, but other times, when the grade level lacked FH teachers, other teachers had to take on the subject. Another headteacher (H) referred to the teacher's own desire to teach FH but was not sure whether this teacher had any formal FH qualifications.

Implementation of Teaching FH: Number and Duration of FH Lessons in Grades 1–4

There was significant variation in the number of teaching hours allocated to FH in years 1–4 across the different schools. School A had allocated 60 minutes per week in grade 4, and lumped the lessons together, so that they could teach 120 minutes every other week. In school B, 30 minutes were set aside per week for FH in grade 3. This school had chosen to implement longer sessions in grade 6 and use less time on the subject in grades 1–4. School C had allocated 30 minutes to the subject per week in grade 1 and 30 minutes in grade 2, but this was "on paper," as school leader C put it. In practice, the teachers at this school taught FH whenever it fitted into the schedule, and most of the teaching was interdisciplinary. School D resembled school C, as they did not have specific teaching hours allocated for FH, either. Instead, they saved up time, compressed into individual sessions or days, and mostly created "happening days", which was the term used by headteacher D. Schools E and F had set aside one lesson per week in grade 4, according to the headteachers. The headteacher for school F specified that this was 45 minutes lessons (even though the curriculum refers to 60 minutes lessons) but stated that they spent more time on lessons in grade 6 to compensate.

School G had chosen to spend only 10–20 minutes of FH per week for years 1–4. They also prioritized to teach FH in grade 6 and encouraged class teachers to save up time for cooking or focus on cooking activities during designated outdoor days, for instance. Whereas for school H, 60 minutes was set aside for FH in the teaching kitchen per week. The headteacher at school H emphasised that the class teacher could choose whether to use the teaching kitchen or work interdisciplinary, and that this was the teacher's choice.

Implementation of Teaching in FH: Knowledge of Competence Aims for FH After Year 4

The headteachers' knowledge of the specific competence aims for FH after year 4 was in general low. Four claimed they knew them to a certain extent, whereas the others admitted that they did not: Headteacher B said:

> No, now I'm not going to brag about that. I used to know them before.

whereas headteacher D stated:

> Now I don't remember the competence aims myself either, from the first to the fourth… It is up to each individual teacher, too, isn't it? So, it may very well be that we have many at the lower primary level who are really good at looking at them. That, I simply do not know.

Another headteacher (E) said she had read them through, whereas headteachers A, C, F and H, all claimed they knew the main characteristics of the FH curriculum. Headteacher G replied:

> Far too little, I'm too bad at that.

Prioritizing Food and Health in Grades 1–4

For the question "How is the school's teaching in FH prioritized at grades 1–4?" there was a large variation in replies, from headteachers who stated that FH was not highly prioritized, headteachers admitting that it might be a bit random, to four headteachers claiming that FH was equated to other subjects, and that it was prioritized to the extent that they fulfilled the number of annual teaching hours set aside for the subject. Headteacher C said that it was not the highest priority, while D said:

> No—say it's a bit random. I don't know the details of all the lessons at all levels… It may be a subject, where perhaps looking at competence aims for the lower primary level, we might have a little to work on.

Whereas headteacher E claimed that they prioritized FH well with the number of lessons set aside for the subject and added that they had a "very capable teacher" who taught the subject. Another headteacher (G) stated:

> It is primarily teacher-led, we must say. And we see that there are individual differences.... But we do not have any separate annual teaching plan for Food and Health for the first to fourth grade. So, it is based on the curriculum and the teacher himself who sets up all that.

And headteacher H admitted the following:

> We are probably… at 1–4, we are extremely concerned with reading and numeracy, and that is in a way important, and then Food and Health is not weighted all the way up there, absolutely not.

Also, as regards the content of the teaching lessons, the emphasis varied, as two of the headteachers (A and B) both stressed the practical part of the subject, whereas a third headteacher (C) said the practical component (i.e. cooking) was the least prioritized part. The other headteachers did not mention the content of the lessons in their replies at all.

Potential Challenges Associated with Implementing FH Education in Grades 1–4 in the Future

When asked what they thought were possible challenges in implementing teaching in FH at grades 1–4 in the future, four of the headteachers immediately answered that they did not see any major challenges. Some of them mentioned possible budget cuts in their municipalities as a potential future challenge. One headteacher (D) brought up the number of teaching hours in his reply:

> Of course, the largest challenge is perhaps the number of hours, which is so low that it can almost be forgotten.

Headteacher B also referred to possible budget cuts and said:

> Challenges will be the municipal budget, that we will be forced to make cheaper and less [food] and actually reduce the quality of the subject. And that this subject, like all other practical-aesthetic subjects, is deprioritized and theorized. So, school becomes a theoretical arena. That is my big concern. Because what do we get then? We get restless students, who don't get any breaks in their everyday life. And then they don't bother with anything anymore, quite simply.

Whereas headteacher G said that the largest challenge was how they had organized their teaching as it tied up a lot of time in grade 6. She underlined that they thought this was a good solution, but worried that it might lead to some teachers forgetting to focus on FH throughout the year in grade 4, as so little time was left for the subject for this grade (this school had set aside 10–20 minutes for FH per week in grade 4).

Three of the headteachers did not see any challenges related to lack of formal FH qualifications among the teachers, whereas headteacher D said they were lacking teachers with formal qualifications in FH. Headteacher A would have liked a higher focus on courses, or further education within FH, to give the teachers some inspiration and enthusiasm for the subject. As he said:

> … this is a subject that requires quite a lot of pre- and post-work, and that the implementation phase is planned, so that it does not become a 'chaos- subject'.

However, headteacher B did not share these worries, and stated:

> When you are that far down the levels (i.e. grades 1–4), I think most people have enough knowledge to be able to cook that food and organize it in a sensible way.

Discussion

Overall, the interviews left an impression that the headteachers seemed to have little knowledge about how teaching FH was planned and executed at their school, and gave class teachers much freedom in designing, planning and carrying out their teaching. Headteachers with formal training in FH and/or own teaching experience in the subject, seemed to have a somewhat higher interest in FH, perceived it as more important and had more insight into how FH was taught at their school, compared to headteachers without formal training and teaching experience in FH. The fact that headteachers' knowledge varied, is in line with Holthe et al. (2013), who studied schools' organization of teaching in PAS in sixth grade, and found that knowledge of the curriculum in PAS varied between schools and informants, and that headteachers used terms from the curriculum to a lesser extent when they referred to PAS, as opposed to other school subjects.

Furthermore, it seemed like a majority of the headteachers we interviewed did not have sufficient knowledge about the content of FH as a school subject, i.e. the number of teaching hours set in the curriculum, nor the competence aims. This is also in line with previous findings, where Veka (2022) found that headteachers had little insight into sixth grade FH teachers' efforts to interpret the FH curriculum. In addition, the headteachers in Veka's study left the entire responsibility for teaching FH to the individual teachers (Veka, 2022, p. xi).

Additionally, our results indicate that the headteachers we interviewed "got away" with their lack of knowledge by referring to trust management, the teacher's own responsibility, and their delegation of authority. One could claim that this signals trust and confidence, but it could also be perceived as a waiver of responsibility, seen in relation to the requirements of The Education Act (1998, Chapter 2, Section 2–1), which clearly states that students have the right to a public primary education in accordance with the curriculum of each school subject. However, our findings are in line with the results from the County School Governors' joint national supervision, 2014–2017: "During these four years, we have found many breaches of the requirement that the headteacher must ensure that the [students'] training overall covers all the competence aims for the main stage, the specific subject or the individual training targets…" (The Norwegian Directorate for Education and Training, 2019, p. 11).

Such a leadership style may affect student outcome negatively, as Robinson et al. (2008) meta-analysis of school leaders' impact on student performance indicated that emphasizing the core activities of learning and teaching had a strong positive influence. One of the dimensions that proved to influence student performance was to plan, coordinate and evaluate teaching and the curriculum (Robinson et al., 2008). Thus, it may seem that a leadership style solely based on trust, where much responsibility is left with the individual teacher, as has been the tradition in Norwegian schools (Helstad & Møller, 2013; Veka et al., 2020)—and a probable scenario based on the findings in this study—is insufficient.

Veka et al. (2020) have previously reported that FH teachers often work alone, cooperating only to a small extent with others (i.e. with a limited professional community), and with little influence from the headteacher. This may create a particularly vulnerable situation for teachers without formal education in FH, which may also be the case in our study. Furthermore, Veka et al. (2018) found that many FH teachers based their teaching more on their own perceptions and experience than on the curriculum's teaching goals. When the headteachers do not monitor training in a particular subject more closely than our results indicate, this may easily lead to a similar outcome. As previously stated, children and young people have the right to education according to the competence aims in the curriculum (The Education Act, 1998, Chapter 2, Section 2–1). When this is not provided by the schools, one could therefore assert that the students' rights are violated.

On the other hand, Norwegian headteachers express a large workload (Wehus, 2023), with teacher norms (Pedersen et al., 2022) and qualification requirements in the so called "core subjects" (i.e. Norwegian, English, Maths) to be kept (Borgen et al., 2023) and may therefore prioritize these subjects at the expense of FH. Langford et al. (2015) reviewed essential components and barriers to success for the health-promoting schools' framework and found that an emphasis on academic subjects and a lack of institutional support acted as barriers to implementation of the framework. These factors may also be at play in our study, as headteacher H pointed out that they are extremely concerned with reading and numeracy at their school.

We found significant variation in the organization and implementation of teaching FH in grades 1–4 in the eight schools reviewed in our study. According to a White Paper to the Parliament, Norwegian schools are characterized by large differences, both between classrooms, between schools within the same municipality, and between municipalities and different parts of the country (Ministry of Education and Research, 2017, pages 5–6). As Borgen et al. (2023) claimed, headteachers' authority to allocate financial resources for material and teaching aids based on local priorities, and their autonomy to decide at which grade FH teaching is placed as well as the number of lessons at each level, will result in large variations in the FH training offered between different schools. Municipal self-government has long been part of the social system in Norway (Ministry of Local Government and Regional Development, 2023), but comes with some very unfortunate "side-effects", such as large variations in the quantity and quality of PAS and FH teaching between schools.

Despite all variation in teaching FH in grades 1–4 reported in this study, most headteachers interviewed saw few challenges related to teaching FH in the lower primary level, claiming that FH was treated equal to other subjects. When probed, it became apparent that the subject was given low priority in several of the schools studied. This finding is supported by Bohm (2022), who reported that Swedish HE teachers experienced HE to have a low status, and that it was not prioritized by headteachers (Bohm & Oljans, 2025). However, teaching in FH in grades 1–4 should be prioritized by the school management to a larger extent in the future, to enable the students to achieve the competence aims in FH curriculum (Bjørkkjær & Bere, 2019, p. 131). Also, several researchers have asserted that an early start is essential to contribute to healthy and more sustainable eating habits later in life (see for instance Ares et al., 2024; Lavelle et al., 2016; Worsley et al., 2016). This assertion is further strengthened by the Norwegian government's distinct ambition to increase the competence and status of PAS in kindergartens, schools, and teacher training (Ministry of Education and Research, 2019b).

Bjørkkjær et al. (2023, p. 6) also emphasized that variation in teacher competence and in delivery and quality of FH lessons, as well as how local school authorities prioritize and organize the FH subject, may negatively impact the systematic nature of food education. Hansen (2021) interviewed 15 adolescents currently in high school about their experience of FH in primary school, and whether the subject had motivated them to lead a healthier lifestyle. The former students said they had little benefit from their FH education and claimed that the teaching had not been motivational or "educational" enough to have an impact on their food and lifestyle choices today. These findings, seen in context with the findings from our study, indicate that the current situation is far from optimal and may affect the students' learning outcomes from FH negatively.

Holthe and Wergedahl (2013) have previously concluded that teaching FH in grades 1–4 seems to be a low priority in Norway. The findings from our study suggest that this is still the case. Wergedahl and Bjørkkjær (2019) claimed that building formal competence and increased professionalism were central for raising the status of the school subject FH in general and stated that it is vital that the school management invests in FH. The results from our study indicate that we still have a way to go. According to FH teachers, facilitation at managerial and organizational level are key success criteria for achieving the ambition outlined in the FH curriculum: that teaching FH shall contribute to promoting a healthy lifestyle for all students (Ministry of Education and Research, 2006; Østby, 2015).

When asked about future possible challenges in implementing FH education in grades 1–4 in the future, several headteachers mentioned possible budget cuts. A tight financial, municipal situation may add to the perceived pressure and workload headteachers experience (Wehus, 2023). Hence, if the government wants to be serious about the strategy launched in 2019 on PAS (Ministry of Education and Research, 2019b), it ought to be accompanied by earmarked funds to help the municipalities strengthening these school subjects. Further, it is often claimed that teaching FH is expensive due to the high cost of food items (Helland et al., 2021), and as the subject demands major physical, temporal, and human resources (Worsley et al., 2016). Hence, it may seem counter intuitive that school owners and headteachers allow for such large investments, while at the same time give the subject such low priority. If school management and school owners prioritized FH by providing a proper organizational framework and support, and if headteachers started taking their responsibilities to lead, supervise and monitor teaching in FH more seriously than what seems to be the case, it may be possible to utilize the subject's large potential (Bjørkkjær et al., 2023; Øvrebø, 2019); to teach children the basic principles they need to feed themselves and their future families within the contemporary food environment (Lichtenstein & Ludwig, 2010).

Study Limitations

This study has some limitations. Firstly, it is a small study, covering only eight schools, which limits the extent to which the findings can be generalized to all Norwegian primary schools. However, with our strategy of sampling schools from all five regions in Norway, the data material provided a good geographical spread. In addition, by random sampling of schools, we aimed to increase the reliability of our study results, so we could draw more valid conclusions from the research project. Nonetheless, as with all interview studies, the results reflect self-reported perceptions, which may be influenced by personal or contextual factors. And although the participants represented geographical diversity and provided rich qualitative insights, the small sample size limits the extent to which the results can be generalized.

Secondly, data were collected in 2018, and although the structural conditions for FH have remained largely stable, local priorities may have shifted over time. Given the fact that school leaders' perspectives in curriculum-making within FH/HE education is a relatively understudied area in both national and international research, and as there have been no major changes in the Norwegian education system since 2018, we still think our results may provide a valuable contribution to the field of HE education.

Thirdly, our results may not be valid for the "average Norwegian school" as such, as headteachers willing to participate in the study might have be more engaged in FH than the "average headteacher". It was however a conscious choice to recruit from practice schools, assuming a priori that they would provide examples of good practice, as there is reason to believe that practice schools for teacher education may be better at implementing curricula, national signals and guidelines for teaching due to closer interaction with teacher education institutions (cf. Aadland et al., 2023). Still, our results show a rather low prioritization of FH, and little awareness of the headteachers' formal responsibilities in securing proper FH education in grades 1–4. Hence, the situation may be even worse for FH education in primary schools choosing not to participate in the study, and for schools not being practice schools.

Finally, it may also be considered a study limitation that headteachers do not always know FH details firsthand. However, we consider their level of knowledge about how FH is actually taught in grades 1–4 at their school, as an important part of our findings and not necessarily as a study limitation.

International Implications

As Smith et al. (2022) pointed out in their analysis of 11 different national, mandatory, primary school food education policies world-wide, Norway is in a unique position with its generalist food curriculum where food is the central focus topic. Still, as our study indicates, there may be quite a gap between the requirements of state-regulated, mandatory national curriculums, and how the curriculum is in fact implemented in schools (cf. Bohm, 2022). Pointing out and mapping these discrepancies may be the first steps towards closing this gap, and thereby contribute to better HE teaching in the 21st century, so that young students may receive the amount and quality of teaching they are entitled to according to national mandatory HE curriculums, in all countries where they exist (see Smith et al., 2022 for an overview).

Hence, this study shows the importance of school leaders' attitudes, knowledge, perception and prioritization of FH and how they may affect FH teaching in lower, primary school. Mapping these may be seen as a first step towards better HE teaching in the 21st century (International Federation for Home Economics, 2008).

Conclusions and Implications for Practice

The prioritization of FH in grades 1–4 seemed to vary at random between the schools included in our study, based on headteachers' own interest, competence and values attached to FH, despite Norway having clear national requirements for teaching FH. This may lead to undesired variation in the quality of teaching between schools, and to young students not achieving the competence aims in FH after year 4 of primary school. Further, the findings from this study indicate that headteachers may not be properly aware of the responsibilities they have in securing the required number of teaching lessons in FH also in grades 1–4, nor to ensure that FH teaching is in line with the competence aims set out in the FH curriculum. These legal

obligations could be emphasised more in national school leader development programs. To increase the status of FH, one could include a "crash course" on the specific requirements and demands for teaching FH—as well as the other PAS—into the national education program for school leaders.

Furthermore, if national education authorities set clearer guidelines and expectations for the FH curriculum—treating it as a legal obligation like other school subject curricula—it would place responsibilities on school owners and headteachers alike. Additionally, closer supervision from County Governors to ensure that young students receive the required number of lessons and quality of education they are entitled to according to the subject curriculum, could help headteachers prioritize their responsibilities for the FH curriculum in the early years of primary school. Finally, clear requirements from national education authorities for formal competence to teach FH at all levels in school may also contribute to increasing the subject's status and help headteachers understand the importance of young students receiving the quantity and quality of FH teaching they are entitled to. This could all lead to a stronger commitment to FH during the first years of primary school in the future.

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Disclosure Statement

The authors report there are no competing interests to declare. We would however, like to inform that several of the authors have been involved in the board of The Norwegian Association for Food & Health in Education at various points in time. At the time of data collection and until 2020, Anne Selvik Ask was a board member, while Eli Kristin Aadland and Merete Hagen Helland became board members in 2020.

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PEER-REVIEWED PAPER

Fostering Judgement Competence in Austrian Home Economics Education: Teacher Perspectives and Practices

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Abstract

*Developing students' ability to make informed and reflective judgements is a core objective of Home Economics Education (HE) in Austrian schools. This study investigates Austrian secondary school HE teachers' understanding, discipline-based educational approaches, and perceived challenges in fostering this competence. Qualitative semistructured interviews (*n = *12, including pretest interviews) were conducted with HE teachers representing diverse experience levels and school contexts. Data were analysed using qualitative content analysis (Kuckartz & Rädiker, 2023). Findings reveal a heterogeneous, yet strongly practice-oriented understanding of judgement competence. Teachers identified sensory, consumer, aesthetic, and emotional judgements as particularly relevant within the HE context. They emphasised the vital connection between theoretical knowledge and practical experience, including the value of learning from mistakes. While a range of discipline-based educational strategies are employed, the development of judgement competence often occurs implicitly rather than through deliberate explicit instruction. Key challenges include time constraints, limited resources and varying levels of perceived importance by school administration and heterogeneous levels of institutional support. The study highlights the need for clearer discipline-based educational strategies and enhanced structural support to effectively promote judgement competence.*

KEYWORDS: **HOME ECONOMICS EDUCATION, JUDGEMENT COMPETENCE, CRITICAL THINKING, QUALITATIVE RESEARCH, TEACHERS' PERSPECTIVES, AUSTRIAN DISCIPLINE-BASED EDUCATIONAL RESEARCH**

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Introduction

The capacity for sound, reflective judgement—often referred to as *Urteilskompetenz* in German-speaking educational contexts and closely related to international concepts such as critical thinking (Ennis, 1987) or reflective judgement (Dewey, 2011)—is essential for navigating the complexities of everyday life in 'glocal' societies in the 21st century. It is recognised as a key competence within Austrian Home Economics (HE) education (Buchner & Leitner, 2018; Federal Ministry of Education, Science and Research [BMBWF], 2024). This competence empowers individuals to make responsible decisions regarding health, consumption, and sustainable living (Angele et al., 2021, 2023; Marchand, 2015; Wagner-Kerschbaumer & Angele, 2023). Despite its acknowledged importance, empirical insights into how HE teachers understand and actively promote this competence—particularly in Austrian secondary schools—(level I consists of students aged 10–14 years)—remain scarce (e.g. Pfeffer, 2023; Woltran, 2020). This study aimed to address this gap by examining teachers' conceptualisation of judgement competence, the discipline-based methods they apply, the judgement types they consider relevant, and the contextual factors shaping its development in the classroom.

Methodology

A qualitative, exploratory design was employed using semistructured interviews. Twelve Austrian secondary school HE teachers—selected to represent a range of experience levels and school contexts—participated in the study. Interviews focused on teachers' understandings of judgement competence, relevant student judgement types (e.g., sensory, consumer, aesthetic, emotional), discipline-based strategies, influencing factors, and observable indicators of competence development. Interviews were transcribed verbatim and analysed using qualitative content analysis (Kuckartz & Rädiker, 2023), involving iterative coding and thematic development. A comprehensive, theory driven coding manual with explicit category definitions, anchor examples, and decision rules guided the analysis. All coding steps were documented via an audit trail in MAXQDA, ensuring rule-guidedness and procedural transparency. To ensure quality and consistency in the analysis, both intercoder and intracoder reliability checks were conducted. An intercoder reliability check with an experienced second coder yielded good agreement (Cohen's Kappa = 0.71), in accordance with established procedures (Lombard et al., 2002). A six-month interval intracoder reliability check confirmed coding stability over time. Ethical approval was obtained by the Ethics Committee of the University of Vienna in July 2023, and all participants provided informed consent.

Findings

The following themes were derived through a structured qualitative content analysis process, combining theory-based category development with data-driven refinement. Final categories were informed by recurrent patterns, semantic density, and intersubjective agreement within the research team. Key findings include:

- Conceptualisation of Judgement Competence: While definitions varied, teachers commonly viewed judgement competence as a complex, practice-oriented ability extending beyond mere cognitive processes. It entails integrating knowledge, experience, reflection, and values to make reasoned, context-relevant decisions. The teachers' practice-oriented understanding, viewing judgement competence as embedded in everyday decision-making, aligns well with the Internation Federation of Home Economic's (IFHE) definition of Home Economics focusing on the 'practical concerns of individuals and family in everyday life (IFHE, 2008, p. 1) and encompassing multiple dimensions from the household to the 'glocal' community.

- Relevant Judgement Types: Teachers consistently highlighted sensory (e.g., evaluating food properties), consumer (e.g., making informed purchasing decisions), aesthetic (e.g., appraising food presentation or design), and emotional (e.g., considering well-being, empathy, or social factors) judgements as central to HE. The emphasis on sensory and consumer judgements aligns with international discourses on core competencies within food literacy (Vidgen & Gallegos, 2014) and consumer sciences.
- Discipline-based Strategies: Teachers described fostering judgement competence as intrinsically linked to experiential learning, particularly through cooking and household-related activities. Creating opportunities for explicit reflection, discussion, and justifications of choices were considered essential. However, such elements were often embedded implicitly rather than treated as distinct discipline-based goals. Learning from mistakes considered a key experimental component.
- Influencing Factors: Teachers identified various contextual influences on judgement competence development including students' social background, social dynamics, motivation levels and structural constraints such as limited lesson time, insufficient resources (e.g., budgets, kitchen facilities), and the perceived status of HE within the school. Teacher's own modelling of judgement and facilitative roles were seen crucial.

Discussion

The findings indicate that Austrian HE teachers hold a rich, practice-based understanding of judgement competence and recognise its educational value. The identification of four specific judgement types (sensory, consumer, aesthetic, emotional) offers a context-sensitive extension of existing theoretical models (Marchand, 2015). However, the predominance of implicit instructional approaches suggests a disconnect between the recognition of judgement competence as a discipline-based educational goal and the systematic implementation of discipline-based educational strategies to foster it. Structural limitations—especially time constraints and resource deficiencies—present significant obstacles. Additionally, the perceived marginalisation of HE within school structures may impede sustained focus on judgement competence.

Conclusion

This study provides important insights into Austrian HE teachers' understandings and practices related to judgement competence. While a strong practical orientation is evident, there is a pressing need for more explicit discipline-based educational strategies, targeted learning environments, and adequate resources. Supportive school leadership and sufficient curricular time allocation are also essential. Strengthening the deliberate cultivation of judgement competence is crucial for HE to fulfil its transformative mission of promoting well-being and sustainability, as outlined in the IFHE Position Statement (IFHE, 2008). Further research shall investigate the effectiveness of specific subject-didactic interventions aimed at fostering the identified types of judgement competence more explicitly.

Biographies

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VIEWPOINT PAPER

After Postmodernism: Understanding Today's World

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Abstract

Home economists must remain knowledgeable about cultural evolutions and varying interpretation of changes and transitions. This discussion paper elaborates on post-postmodernism *assuming that something is happening culturally that takes us beyond postmodernism. After identifying nearly 20 post-postmodern theories, the discussion narrowed to four oft-cited approaches: digimodernism (originally pseudo-modernism) (2006), performatism (2008), altermodernism (2009) and hypermodernity (2015). Each was inspired by the onslaught of sophisticated digital technological advances leading to a cultural profile and attendant cultural logic that differs from previous eras. The profession must follow and engage this discourse because the cultural evolution theories that we embrace will assuredly impact our practice.*

KEYWORDS: **POSTMODERNISM, POST-POSTMODERNISM, PERFORMATISM, ALTERMODERNITY, DIGIMODERNISM, HYPERMODERNITY, HOME ECONOMICS**

Introduction

Historians, theorists, and philosophers use the noun *modern* to anchor their names for three main cultural eras spanning two millennia, 800–2000: Pre-Modern, Modern, and Postmodern. As do other professionals (Nealon, 2012), home economists must remain knowledgeable about cultural evolutions (i.e., the process of change in a culture's information, beliefs, and practices over time) and varying interpretation of changes and transitions (McGregor, 2025).

While acknowledging the ongoing debate about whether postmodernism is dead or alive (McGregor, 2025), this discussion paper elaborates on *post-postmodernism* assuming that something is happening culturally that takes us beyond postmodernism. Discussion papers present the author's balanced coverage of other's opinions about and knowledge of a topic without espousing any particular position. The analysis and synthesis of these exchanges are intended to become part of the larger, discipline-wide or practice-focused conversation (American Academy of Family Physicians, 2019; McGregor 2018).

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Postmodernism

Succinctly, the postmodern era (1960–2000) pushed back against the unintended negative side effects of modernism (i.e., the age of reason, empiricism, and science), which coincided with consumerism. People took exception to material progress at the expense of societal progress; the unchecked technological juggernaut; objective, value-free thinking and knowledge; the loss of community resilience; weakened, disconnected families; the psychological toll; and the deep entrenchment of greed, fear, narcissism, irony, competition, and fragmentation (McGregor, 2025; Oord, 2001).

The postmodern era (a) acknowledged popular culture (i.e., shared meanings that have been popularized by the culture industry via mass media, marketing, and capitalism) and (b) advocated for overturning the modernist worldview (deconstructivism). But it also strived for liberation from women's oppression; equity and equality; ecological responsibility and healthy relationships with nature; many ways of knowing beyond empiricism (i.e., respect for narratives, stories, the Scared, wisdom, the Unknown, and the Unknowable); and holism and interdependency (Oord, 2001).

Post-Postmodernism

Peters et al. (2022) observed that postmodernism "has been succeeded by a new sensibility and configuration. We are not sure what it is exactly, but we know an era has ended, and another has begun" (p. 175). Once discourse began in the early 1990s about postmodernism's demise, many names were posited for what comes next: post-postmodern, metamodern, hypermodern, amodern, digimodern, and cybermodern (Peters et al., 2020). Rudrum and Stavris (2015) added performatism, remodernism, automodernism, and renewalism. Bonfiglioli (2013) contributed altermodernism, critical realism, and supermodernity. Peters et al. (2022) added trans-postmodernism, and post-millennialism. And Babii (2020) named transmodern, and renovalism.

This amounts to nearly 20 new theories of what comes after postmodernism. Half of these labels drew on different prefixes other than *post-* (e.g., *meta*, *hyper*, *a*, *digi*, *cyber*, *auto*, *alter*, *super*, and *trans*). When it comes to epochal changes in culture, "each time we use a new prefix, we agree ... that society, along with the idea of modernity, has changed" (Babii, 2020, p. 23). Culture has indeed changed or is in the process of changing—the conundrum is what name and conceptualization best captures recent cultural shifts and new realities. What is the best way to understand our present world?

To reiterate, "various 'post-postmodern' theories have emerged, none of which have been as influential or enduring as the Twentieth Century's philosophical offspring [postmodernism]. Yet they continue to proliferate in various manifestations" (Lyons, 2015, p. 19; see Babii, 2020). Lyons (2015) queried "out of all the theories floating around, can we truly tell which ones will solidify long enough to define the current and upcoming era?" (p. 21). This quandary is important because home economists need "an updated conceptual vocabulary for diagnosing and responding to our changed situation" (Nealon, 2012, Marketing Flyer).

Despite nearly 25 years elapsing, none of these theories have gained widespread acceptance (Babii, 2020; Peters et al., 2020) perhaps because people are trying to name a culture "that is still liquid" (Lyons, 2015, p. 21)—still evolving. "We are not that far from postmodernism, and perhaps the new cultural era is still about to come, showing new symptoms, or new signs, but without being born yet, still germinating in its mother's womb" (Hogan, 2022, last para).

This discussion paper focuses on four oft-cited approaches (chronologically): digimodernism (originally pseudo-modernism) (2006), performatism (2008), altermodernism (2009) and hypermodernity (2015). Each was inspired by the onslaught of sophisticated digital technological advances leading to a cultural profile and attendant cultural logic that differs from previous eras (Lyons, 2015; Nealon, 2012).

Digimodernism (Originally Pseudo-Modernism)

In his seminal article about the death of postmodernism and beyond, Alan Kirby (2006) (British cultural critic) coined the term *pseudo-modernism*, which he later changed to *digimodernism* (Kirby, 2009). In a compelling, oft-cited exposé, Kirby (2006) articulated his thoughts on the essence of what followed postmodernism. When used as a prefix, *pseudo-* means resembling or imitating (Harper, 2025). Pseudo-modernism was so named because Kirby felt pseudo- captured the triteness and shallowness (disingenuity) of the culture that evolved after postmodernism, perpetuated by new digital technology-based cultural products.

Cultural products are "goods and services that include the arts (performing arts, visual arts, architecture), heritage conservation (museums, galleries, libraries), the cultural industries (written media, broadcasting, film, recording), and festivals" (Aiello & Cacia, 2014, p. 8). Pseudo-modern cultural products include reality TV, news programs and outlets that accept and report readers' comments, computer games, the Internet, Wikipedia and similar multiauthor edited sites, docu-soaps, and computer-generated imagery (CGI) cinema. People actively help create content for these cultural products (rather than passively receive cultural content), but their participation is often superficial and trivial (of little value or importance) (Kirby, 2006).

Kirby (2006) claimed that creating and using these new cultural products, which are shaped and proliferated by digital technological advances, has led to a debilitating (a) intellectual framework and (b) philosophical cultural environment that he dubbed pseudo-modernism. Regarding the latter, he said that philosophers are too overwhelmed (and perhaps coopted) (debilitated) by the globalized market economy and consumerism juggernaut to posit theoretical and philosophical stances that accurately describe post-postmodernism.

Regarding the debilitating intellectual framework, Kirby (2006) described today's culture as banal (unoriginal) and vacuous (lacking in thought and intelligence). This characterization arises from the nature of pseudo-modern cultural products that stemmed from digital advances in information and communication technology: computers; laptops; iPads and tablets; smart phones and similar technological means; interactive technologies; and social media platforms that enable emails, texting, private messaging, YouTube videos, blogs, chatrooms, message boards, Facebook, X (formerly Twitter), wikis, music sharing (Spotify) and so on.

Kirby (2006) argued that when people express culture using these technologies and cultural products, they perpetuate illusions of reality, participation, and power, hence the adjective pseudo (resembling or imitating but not real). People are placed in a trance-like state, where power brokers in the monopolizing, globalized market economy can deceptively manipulate and control them. He also referred to consumer fanaticism, fatalistic anxiety, technologized cluelessness, the cultural desert, and ephemeral reality. "A tiredness, a shallowness dominates all" (p. 36). He lamented "the storm of human activity producing almost nothing of any lasting or even reproducible cultural value" (p. 36). How then can culture be perpetuated and inculcated?

He surmised that the hegemony of a globalized market economy has narrowed our intellectual world through the spread of digital technological innovations that are "all-engulfing, all-explaining, all-structuring" (Kirby, 2006, p. 37). Postmodernism's original intent to deregulate all spheres except the economy was outstripped by the current trend toward deregulating and liberalizing just the economic sphere (e.g., neoliberalism; capitalism; and top-down globalization) (Lipovetsky, 2015). The resultant technology-enabled economic monopolization makes people's intellectual state one of banality, vacuity, ignorance, anxiety, and fanaticism. "In place of the neurosis of modernism and the narcissism of postmodernism, pseudo-modernism *takes the world away* [via] the *trance*—the state of being swallowed up" (Kirby, 2006, p. 37).

Digimodernism

After much contemplation, Kirby (2009) coined the term *digimodernism* to replace pseudo-modernism. He felt that "digi" better reflected his concern for how *digital* technology (versus analog) dismantled postmodernism, impacted cultural products, and reconfigured our culture and explanatory logic—how we understand and make sense of the world (Kirby, 2015). Digital technology relies on microprocessors or integrated circuits (called chips), which are present in (a) personal computers (e.g., desktop, laptop, notebook, tablet, and smartphones); (b) computerized devices (e.g., mobile devices, digital cameras, and cloud platforms); and (c) electronic systems and resources. These technologies are the new face of contemporary culture (Digital Adoption Team, 2025).

Kirby (2009) was interested in how these digital technologies impact the creation and use of cultural products to represent and express cultural evolution beyond postmodernism. For him, the digimodernism era is characterized by (a) multiple authorship of cultural artifacts (e.g., wikis, moderated chat rooms, and blogs); (b) transience and evanescence (quickly fading from memory or existence) (e.g., ever-changing wiki entries, disappearing chats and blogs); (c) onwardness and endlessness (cultural works remain in progress—always open to a sequel like TV series); (d) haphazardness (no order; aimless); and (e) the perpetuation of false earnestness and sincerity via fictional sages (e.g., the wizards Gandalf, and Dumbledore) and suspect expertise (e.g., reality TV shows).

Kirby (2009) accused digital technology of normalizing these damning traits and desocializing culture, which involves removing people from their customary social environment thus destabilizing and disorienting everyone (Whitaker, 2020). Such is the nature of culture following postmodernism.

Performatism

Performatism was purposively named without using a new prefix for the noun *modernism*. Its creator, Raoul Eshelman (2008) (Germany-based academic), explained that performatism is an epochal concept (i.e., the beginning of a totally new period in history) completely different from postmodernism. He presumed that insights gained from interpreting performances in art (representing life) and literature and film (representing fiction) as well as insights from philosophy and architectural creations could spillover to help us understand society and the human condition (Eshelman, 2020).

He especially desired an approach that offered a better understanding of today's irony-ladened culture—an approach that would counter its associated jadedness with an abundance of positivity (Eshelman, 2020). Postmodern irony has worn people down and left them struggling with an ache for positivity, which can only be achieved by believing in something not choked off by (a) irony (i.e., perversely contrary to expectations), (b) skepticism (doubt) and (c) cynicism (negative outlook due to distrust and disillusion) (Eshelman, 2015, 2020).

He berated postmodernism for its "endless irony and metaphysical skepticism [calling instead for] unity, beauty, and closure" (Eshelman, 2015, p. 115). Excessive, relentless irony can lead to apathy, anger, melancholia, detachment, and the slacker archetype (e.g., unambitious, and resistant to societal expectations) (Fitzgerald, 2012). Such is the nature of our current cultural evolution. Performatism's positivity arose to squelch these negative emotions and values.

Altermodernism

Nicolas Bourriaud (2008) (French curator and theorist) posited that although postmodernism is over, we do not know what is coming next. He observed a new kind of modern emerging—*altermodern*. Alter is Latin, *alterare*, 'other' (Harper, 2025). For Bourriaud (2008), *alter* meant otherness as well as differences (e.g., multiplicity and possibilities). He chose alter because *post* conveys linearity (riding on an arrow), but we are actually crawling through a maze (i.e., a globalized, fragmented, and complex world) where we must find meaning (Seph, 2021).

Also, while postmodernity was Western-based, whatever comes next must be "global from scratch" (Bourriaud, 2008, 2:24) (i.e., radical diversity accommodating exile, migrations, and global interactions). This approach to understanding the world can better overcome displacement and fragmentation and embrace networks of relationships amongst otherness and differences (Bourriaud, 2008). He further asserted that whatever comes after postmodernity should be based on translation (i.e., interpreting the essence of a something then recreating it in a new language or form) within the context of the *creolization* of cultures (Bourriaud, 2005).

To unpack this idea, creole is Latin, *creare*, 'to create.' A Creole is born in a country of parents not from that country (Harper, 2025). The creolization of cultures occurs when "participants select particular elements from incoming or inherited cultures, endow these with meanings different from those they possessed in the original cultures, and then creatively merge these to create new varieties that supersede the prior forms" (Cohen, 2007, p. 369). A creolized culture is a hybrid culture involving new, composite identities and cultural practices that are recognizably distinct from their original sources because different groups have merged their cultural identities into new social and political contexts (Brathwaite, 1974). Bourriaud (2005, Abstract) said that

> what matters today is to translate the cultural values of cultural groups [i.e., others] and to connect them to the world network. This ... could be called altermodernism, a movement connected to the creolisation of cultures and the fight for autonomy, but also the possibility of producing singularities in a more and more standardized world.

Indeed, Bourriaud's (2009b) approach to what comes after postmodernism was influenced by cultural changes arising from increased globalization, mobility, migration, diaspora, travel, and communication. Today's world is teeming (i.e., crowded, and full of people) and chaotic; worse, creolization is taking over everyone's identity and daily life. People thus struggle as

they both "traverse cultural landscapes saturated with signs and create new pathways between multiple formats of expression and communication" (Bourriaud, 2015, p. 253). The emergent culture is "stripped of a center [and based instead on translation, creolization], planetary negotiations, and discussions between agents from different cultures" (Bourriaud, 2009a, para. 5).

He asserted that any new approach to understanding our emerging culture should be configured to accommodate both metaphorical and literal travelling in the form of trajectories (journeys) instead of destinations. People are wandering through a polyglot (i.e., myriad signs, formats, languages, and communication modes) that cannot be understood unless translated and then dubbed so others can understand (recounted in something other than the original). Our nomadic, creolized culture is further marked by deterritorialism (i.e., disconnecting something from its original place or territory) leading to a transformation or mutation in its new context. People (creoles) are held together by a new language that goes beyond nations and regions to articulate narratives reflecting multiple meanings of the present (Bourriaud, 2009b, 2015).

In effect, altermodernism assumes that the process of producing a new culture after postmodernism cannot be interpreted and understood without acknowledging the impact of the interconnections and interweavings amongst people jointly producing narratives via a chain of translated and dubbed dialogue. These narratives are constellations of ideas linked by the will to understand each other (Menéndez-Conde, 2009).

Hypermodernism

"Hypercapitalism, hyperclass, hyperpower, hyperterrorism, hyperindividualism, hypermarket, hypertext—is there anything that isn't 'hyper'?" (Lipovetsky, 2015, p. 157). Gilles Lipovetsky (French philosopher and essayist) posited *hypermodernism* as a way to interpret and understand how culture is being produced after postmodernism. This label was "founded on painstaking analysis of the phases, contexts, and reasons that prompted our societies to evolve from modern to postmodern, and finally to hypermodern" (Roult et al., 2022, p. 169). As a caveat, as Lipovetsky's work is mainly in French, my brief overview depends on Lipovetsky's (2015) translated book chapter and Roult et al.'s (2022) interpretation of his approach.

Hyper is Greek, *huper*, 'excessive, above normal, beyond, over' (Harper, 2025). What does a hypermodern culture look like? Why would Lipovetsky choose the *hyper-* prefix to replace *post-*? The hypermodernization of the world happened very quickly, arising from both the consumerism juggernaut and the liberalization and deregulation of global markets (Lipovetsky, 2015). These phenomena led to an "explosion of technology undermining humanity through [both] hyper-individualism and acceleration. [We now live] in a culture of excess and crisis of hyper-individualism, ... narcissism, and megalomania [obsessed with power and dominating others]" (Cooper, 2020, "Black Mirror of Hypermodernisn" section).

The process of undermining humanity ultimately erodes its base or foundation, which in turn leads to potential collapse (like coastal erosion) (Cooper, 2020). A hypermodern culture "generates insecurity, the loss of fixed guide-lines [sic], the disappearance of secular utopias, and an individualist disintegration of the social bond" (Lipovetsky, 2015, p. 167). The words insecure, loss, disappearance, and disintegration definitely imply a gradual undermining and erosion process. Not surprisingly, in addition to being a "societal phase where everything moves much faster via dizzying global connections, [hypermodernity] now influences, if not transforms, the sense of Being and the sense of Existence" (Roult et al., 2022, p. 170).

The self-centered human (for good or bad) is at the heart of hypermodernism and "inseparable from self-expression, self-consciousness and consciousness raising among individuals, paradoxically accentuated by the ephemeral action of the media" (Lipovetsky, 2015, p. 162). He further characterized our culture as empty. People thus try to find "ways to console themselves for the miseries of existence, of filling in the emptiness of their present and future" (Lipovetsky, 2015, p. 164). Paradoxically, the main mechanism is hyper-consumption.

A hypermodern culture is deeply paradoxical in other ways as well. It is technologically hyperconnected while relationally hyperdisconnected. It is hyperfast while hypercompressed (both space and time). It inculcates hyperconsumption while espousing hyperminimalism. It is hypertransient while being hyperinnovative. Hyper-secularity resides alongside hyper-religiosity (Lipovetsky, 2015; Roult et al., 2022).

In Lipovetsky's (2015) opinion, our hyped-up culture is further destabilized by violence, war, fear, suffering, oppression, consumerism, and nihilism leading to a profound threat to democracy when it is most needed. If hypermodernism truly undermines humanity (Cooper, 2020), this spells dire consequences if Lipovetsky's (2015) observations about the character of our current culture hold true.

Summary and Conclusion

Falconer (2008) astutely observed "the unevenness of any cultural evolution (it certainly seems that traditional forms are thriving alongside these other forms)" (p. 7). This characterization seems apropos given the existence of more than 20 labels for what comes after postmodernism with each label vying for attention without notable headway. We do not yet have "a qualitatively different cultural stage" (Menéndez-Conde, 2009, para. 11). "There is no consensus" (Peters et al., 2022, p. 176) on a label, theory, or philosophy that best "expresses the world now coming into being" (Lipovetsky, 2015, p. 157).

This lack of consensus likely reflects the divergent conceptualizations underpinning each approach that explains our evolving culture (see Table 1). Each author had a different take on what our evolving culture looks like after postmodernism. Kirby faulted culture's trance-like, vacuous, and empty state. Bourriaud took issue with the creolization of cultures requiring constant navigation and translation. Lipovetsky was concerned about our hyped-up culture (especially rampant consumerism) and its threat to democracy. And Eshelman worried about our culture's struggle with oppressive irony and bone-deep jadedness (weary and dulled by excessive negativity) and its longing for positivity.

Table 1 Conceptualizations of the World's Evolving Culture

Post-postmodern Theory	Conceptualization of Evolving Culture
Pseudo modernism (Kirby)	Culture and society have become trite, shallow, and superficial. Cultural products perpetuate illusions of an ephemeral reality as well as consumer fanaticism. We live in a cultural desert; fatalistically anxious people harbour a banal and vacuous intellect. Their preferred cultural products put them in a trance that removes them from the real world.
Digimodernism (Kirby)	Digital technologies exacerbated *pseudo modernism* by creating and perpetuating a culture further characterized by transience and evanescence (quickly fading from memory or existence), onwardness and endlessness (no closure), haphazardness (no order; aimless) and false earnestness and sincerity. Technologies removed people from their customary social environment causing destabilization and disorientation.
Performatism (Eshelman)	Postmodernism perpetuated irony (perversely contrary to expectations), skepticism (doubt), and cynicism (negative outlook due to distrust and disillusionment). These negative emotions wore people down leading to bone-deep jadedness (weary and dulled by excessive negativity), apathy, anger, and melancholia and a deep craving for positivity.
Altermodernism (Bourriaud)	Our creolized, hybrid culture is characterized by fragmentation, displacement, exile, diaspora, and teeming complexity—culture has been stripped of its center. People are struggling to deal with nomadism and deterritorialism (disconnection from familiar territories or places). New interconnections and interweavings are involved as divergent people jointly create narratives linked by a will to understand each other.
Hypermodernism (Lipovetsky)	The consumerism juggernaut and the liberalization and deregulation of global markets have sped everything up and undermined humanity. Our culture is one of excess, relentless acceleration, hyper-individualism, narcissism, and megalomania (obsessed with power and domination). This empty culture has created loss, disintegration, insecurity, oppression, fear, violence, nihilism (life has no purpose) and a frightening threat to democracy.

Source Author's Summary

Home economists must follow and engage this discourse because any new theories about culture that we embrace will assuredly impact how our practice transforms. They are also encouraged to delve into contemporary theories of cultural evolution and be mindful of future initiatives that emerge as theorists, philosophers, and historians grapple with what comes after postmodernism. Aided by artificial intelligence, a pervasive culprit is digital technologies, which are a growing concern within the profession (Athanas, 2023; Hustvedt, 2023).

Can one conceptualization of post-postmodernism fully explain today's reality? This is a valid question because, combined, we can say that we live in a culture where weary and jaded people are engaging with many different cultures in an atmosphere of deep emptiness at an untenable hyper-pace. The well-being, sustainability, even desirableness of this cultural evolution is problematic. Can we change the direction of this cultural evolution, which is so steeped in ubiquitous digital technologies? How can we best understand and make sense of our rapidly changing world? With an abiding concern for human well-being and the human condition, home economists are encouraged to actively participate in the global conversation about our evolving cultural milieu.

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Biography

Professor Emerita (MSVU) and proprietor of McGregor Consulting Group (www.consultmcgregor.com), Dr. ***Sue L. T. McGregor*** *has 50 years experience as an educator, researcher, and policy analyst. She specializes in home economics education, philosophy, and leadership; consumer education, studies, finances, and policy; research education and methodologies; and transdisciplinary education, methodology, and scholarship. With nearly 200 peer-reviewed papers, 36 book chapters, and 50 home economics-related keynotes/invited talks in 20 countries, she has published Understanding and Evaluating Research (SAGE, 2018), The Thinking Professional (Emerald, 2025), Learning to Teach (Emerald, 2023) and Consumer Moral Leadership (De Gruyter Brill, 2010). She is the Marjorie M. Brown Distinguished Professor.* ***Email:*** *sue.mcgregor@msvu.ca*

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VIEWPOINT PAPER

Inclusive Financial Education in FCS: Empowering LGBTQ+ Youth for Financial Well-Being

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Abstract

This paper examines the role of inclusive financial education within Family and Consumer Sciences (FCS) in promoting the financial well-being of LGBTQ+ youth. Drawing from peer-reviewed research, it highlights the unique financial challenges faced by LGBTQ+ individuals, including reduced family support, higher poverty rates, discrimination in financial services, and increased living costs in affirming communities. The discussion applies the Inclusive Financial Well-Being Empowerment Model (IFWEM) to demonstrate how educators can address barriers related to access, action, and affect while fostering empowerment. Strategies for inclusion include integrating diverse examples into financial curricula, employing culturally responsive teaching methods, creating supportive classroom climates, and incorporating legal rights and community resources into instruction. The paper also emphasizes the importance of community-based FCS education and partnerships with organizations serving LGBTQ+ populations. By adopting inclusive, equity-focused approaches, FCS educators can improve financial literacy, resilience, and self-efficacy among LGBTQ+ youth, while fostering empathy and understanding among all students. This work underscores FCS's mission to advance equity, inclusion, and the holistic well-being of individuals and communities.

KEYWORDS: **INCLUSIVE FINANCIAL EDUCATION, FAMILY AND CONSUMER SCIENCES (FCS), LGBTQ+ YOUTH, FINANCIAL LITERACY, CULTURALLY RESPONSIVE TEACHING**

Introduction

Inclusive financial education is increasingly recognized as a vital component of Family and Consumer Sciences (FCS) teaching, especially as educators strive to meet the needs of all learners in a diverse society (Tisdell et al., 2011). Innovative approaches are needed to reach today's changing audiences, from new immigrant communities to evolving family structures, even when longstanding FCS topics (e.g., financial stability or resource management) remain the same (Duncan et al., 2022). In practice, this means embracing inclusive pedagogies that account for the complex identities of students and confronting biases that have historically left some youth underserved. For instance, FCS education can be a space to support the identity development of diverse students by decentering a one-size-fits-all curriculum (Duncan et al., 2022). In line with this inclusive mission, professional organizations have affirmed a

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commitment to equity: the American Association of Family and Consumer Sciences (AAFCS) explicitly denounces all expressions of hate, racism, injustice, and discrimination, linking its commitment to diversity, equity, inclusion, and social justice with improved well-being and quality of life for individuals and families (Duncan et al., 2022). Within this context, FCS classrooms are uniquely positioned to support LGBTQ+ youth through inclusive financial literacy education, thereby promoting financial well-being and equity.

In the United States, the discipline is known as Family and Consumer Sciences (FCS), which falls under the broader global umbrella of Home Economics. Throughout this article, FCS is used to reflect the U.S. context in which the discussed practices occur, while aligning with the international Home Economics discourse. The purpose of this discussion is to document the best practices and insights from existing research that can inspire FCS practitioners to incorporate inclusive strategies in their teaching. By understanding the unique financial challenges faced by LGBTQ+ individuals and applying models of inclusive education, FCS educators can help all students, regardless of sexual orientation or gender identity, build strong financial literacy skills. The goal is to empower LGBTQ+ youth with knowledge and resilience in personal finance, fostering their long-term financial security and well-being. This article presents a synthesis of peer-reviewed research on financial literacy, the financial challenges of LGBTQ+ communities, and inclusive pedagogical approaches. It concludes with specific recommendations for educators to create supportive, practical learning experiences that advance both financial capability and a sense of belonging in the FCS classroom.

Financial Literacy and Well-Being: A Foundation

Financial literacy refers to the knowledge and skills needed to make informed and effective financial decisions. Extensive research has demonstrated that financial literacy is a crucial life skill associated with improved financial outcomes and personal well-being (O'Neill, 2019). Unfortunately, many people lack basic financial knowledge, a deficit that hinders those seeking financial security (O'Neill, 2019). Low financial literacy can lead to significant financial mistakes and increased vulnerability. For example, about 36% of Americans in a recent national survey were classified as financially fragile, meaning they would be unable to come up with $2,000 in an emergency; key factors driving this fragility included insufficient assets, too much debt, and poor financial understanding (O'Neill, 2019). These sobering findings underscore the importance of improving financial literacy to enhance individuals' capacity to manage day-to-day finances and withstand economic shocks, core aspects of overall financial well-being. Stable personal finances are key to economic security, and strengthening financial education can even help alleviate material hardship while improving social inclusion, cohesion, and community well-being (McGregor et al., 2023).

Financial literacy gaps are often more pronounced among marginalized groups. Women and racial/ethnic minorities, for instance, tend to have lower financial knowledge on average (O'Neill, 2019). Global data reflect similar disparities; in the Middle East, women's financial literacy rates lag behind those of men, especially among individuals with less education (McGregor et al., 2023). Research also indicates that LGBTQ+ individuals may experience unique financial challenges and vulnerabilities. A recent survey of over 1,000 LGBTQIA+ U.S. adults found that nearly 60% live paycheck-to-paycheck and over one-third have felt blocked or discouraged from using financial services due to bias or discrimination in how those services are designed and offered (NEFE, 2022). Many respondents believed that aspects of their identity, such as sexual orientation or gender identity/expression, led to biased or inequitable

treatment in financial settings (NEFE, 2022). Building a solid foundation in personal finance is especially vital in contexts where structural or social factors heighten individuals' financial risks.

In FCS education, which traditionally emphasizes life skills and holistic well-being, financial literacy has become a key content area. FCS professionals recognize that improving financial capability can bolster overall life satisfaction and stability, aligning with the discipline's focus on individual and family well-being (AAFCS, 2025). By integrating robust personal finance education into the curriculum, FCS teachers can help students develop competencies in budgeting, saving, credit management, and other financial practices that lead to long-term security. Well-designed financial literacy initiatives not only increase knowledge but also build confidence and empowerment for learners (McGregor et al., 2023). Ultimately, an inclusive approach to financial education in FCS serves the dual purpose of improving students' money management skills and advancing equity, equipping all students. Including LGBTQ+ youth and other underrepresented groups, financial literacy contributes to their personal well-being and economic resilience, which in turn supports the overall well-being of families and communities (McGregor et al., 2023). This foundational understanding of financial literacy and its link to well-being sets the stage for a deeper exploration of how FCS educators can make financial education more inclusive and impactful for LGBTQ+ youth.

A Model for Inclusive Financial Empowerment

To effectively reach diverse learners, including LGBTQ+ students, educators are turning to inclusive and culturally responsive models of financial education. One such framework is the Inclusive Financial Well-Being Empowerment Model (IFWEM), which emphasizes adapting financial education to acknowledge learners' identities and promote empowerment (Lurtz & Komarow., 2021). The IFWEM is structured around three key dimensions, access, action, and affect, as sequential barriers to financial inclusion, all underpinned by an overarching goal of empowerment (Lurtz & Komarow., 2021). In this model, access refers to equitable availability of financial services, knowledge, and resources (e.g. having bank accounts, credit, or informational access); action involves the ability to engage in positive financial behaviors (budgeting, saving, etc.); and affect addresses individuals' confidence and feelings about their finances (Lurtz & Komarow., 2021). The model suggests that educators and practitioners should work first to improve access by providing knowledge and tools, then foster action by building financial skills and habits, and finally nurture positive affect through self-efficacy and reduced anxiety around money, all the while recognizing and valuing the person's unique identity and experiences (Lurtz & Komarow., 2021).

What makes the IFWEM especially relevant in an FCS context is its focus on social inclusion and identity. The model was initially applied to underrepresented groups (e.g., neurodivergent individuals) but is broadly applicable to any population that faces financial capability gaps due to exclusion or bias (Lurtz & Komarow., 2021). For LGBTQ+ youth, who often confront stigma or lack role models in financial matters, the framework can guide educators in tailoring financial lessons to resonate with students' lived realities. For example, at the access stage, an FCS teacher might ensure that all students see themselves reflected in the curriculum, using examples of diverse family structures (such as same-sex parents and chosen family networks) in budgeting case studies, or discussing financial institutions that are inclusive and safe for LGBTQ+ clients. In the action phase, FCS teachers can incorporate interactive activities that build skills while validating each student's goals and challenges (e.g., role-playing scenarios

such as renting an apartment in an LGBTQ-friendly community and managing higher living costs). Finally, addressing the affect dimension could involve classroom conversations about money attitudes, encouraging students, including LGBTQ+ teens, to voice their financial worries or aspirations, and guiding them to cultivate confidence. When financial knowledge increases and is personalized, "there is less ambiguity, and more understanding of the power and control every person has" to shape their financial circumstances (Jorgensen, 2020). This empowerment-centric approach directly aligns with FCS's mission to equip individuals with life skills and resilience.

In practice, inclusive models like IFWEM call on educators to be culturally responsive. Research in community-based financial education finds that a large majority of financial educators believe in adapting their teaching to account for learner differences and cultural context (Tisdell et al., 2011). In one study, 95.5% of financial educators agreed it is important to approach teaching by considering differences among learners, and more than half felt that helping learners confront financial inequities in their lives and communities was a key purpose of financial education (Tisdell et al., 2011). Effective strategies identified include using interactive and learner-centered methods, for instance, drawing on students' own experiences, encouraging group discussion, and sharing stories that feature members of diverse groups to illustrate financial concepts (Tisdell et al., 2011). By featuring scenarios and role models that LGBTQ+ youth can relate to, FCS educators can make financial literacy lessons more engaging and relevant. Applying an inclusive empowerment model means shifting from a one-size-fits-all approach to a learner-centered approach, one that acknowledges that factors like family background, gender identity, and sexual orientation can influence financial socialization and behavior, and adjusts the curriculum accordingly to ensure every student is seen and supported.

Unique Financial Challenges Facing LGBTQ+ Youth

Creating an inclusive financial education curriculum in FCS requires understanding the distinct financial challenges that LGBTQ+ individuals often face. A growing body of research indicates that LGBTQ+ populations experience disparities in financial well-being compared to their heterosexual and cisgender peers. For example, a recent analysis using national survey data found that lesbian, gay, and bisexual (LGB) adults have significantly more difficulty managing financially than similarly situated heterosexual individuals (Carpenter et al., 2024). This difficulty manifests across a broad range of financial outcomes. LGB respondents were less likely to have retirement savings or emergency funds, carried higher credit card and student loan debts, and were more likely to use high-cost alternative financial services, such as payday loans (Carpenter et al., 2024). Notably, the researchers determined that these gaps were not fully explained by differences in education, financial knowledge, risk preferences, or even parental financial support; instead, social vulnerabilities such as discrimination and victimization emerge as likely contributors to the financial insecurity of LGB individuals (Carpenter et al., 2024). Bias and exclusion can lead to economic stress, underscoring the need for a supportive and inclusive approach to financial education.

One major hurdle for many LGBTQ+ youth is the loss of family financial support due to a lack of acceptance. Coming out can strain or sever familial ties, and research confirms what many personal stories have illustrated: LGBTQ+ young people often cannot rely on their families to the same extent as their straight/cisgender peers. A nationwide survey in 2023 reported that 73% of LGBTQ+ respondents could count on financial help from their family before coming out, but that dropped to just 62% after coming out, with an even larger decline for transgender

individuals (Watson et al., 2023). In practical terms, this means many LGBTQ+ adolescents and young adults must navigate key financial decisions (such as paying for college, securing housing, or affording basic needs) without the safety net that family support can provide. Family rejection contributes to higher rates of youth homelessness and housing instability in the LGBTQ+ community, which in turn creates an urgent need for financial self-reliance at an early age. As one policy analysis noted, "LGBTQ youth risk losing the benefit of financial support from their families once they come out," which can set off a chain reaction of economic and educational difficulties (T. Underwood, 2024). Lacking parental support and guidance, these youths must learn to budget, save, and manage credit on their own much earlier, often under great stress. An inclusive FCS curriculum that addresses these realities can help fill the knowledge gap and provide critical guidance that at-risk LGBTQ+ students might not receive at home.

Another challenge is that LGBTQ+ individuals disproportionately experience poverty and economic insecurity. Multiple studies in recent years have documented higher poverty rates among LGBTQ+ adults. National data analyses show that more than one in five LGBT-identifying adults live in poverty, compared to roughly 16% of straight cisgender adults (Wilson et al., 2023). Within the LGBTQ+ umbrella, transgender people and bisexual women have some of the highest poverty rates, approaching double the poverty rate of the general population (Wilson et al., 2023). Such disparities are driven by multiple factors: workplace discrimination (leading to lower earnings and higher unemployment), exclusion from family wealth transfers, and added expenses (for example, medical costs related to gender-affirming care or legal fees to secure parental rights in LGBTQ+ families) (T. Underwood, 2024; Watson et al., 2023). These systemic inequalities mean that LGBTQ+ youth often start their financial lives on an uneven playing field. They may have fewer financial resources and role models in their immediate environment, and greater future burdens. It is no surprise, then, that surveys find LGBTQ+ people tend to feel more anxious and depressed about their finances than others; in one study, LGBTQ+ respondents were roughly twice as likely as non-LGBTQ respondents to report feeling financially overwhelmed or depressed (Watson et al., 2023). FCS educators should be aware that some students in their classes might be carrying such psychological burdens related to money, which can affect their learning readiness and trust in financial institutions.

Geographical and community factors play a significant role in the financial challenges faced by LGBTQ+ individuals. Historically, many LGBTQ individuals have moved to urban centers or specific gay-friendly areas in search of social acceptance and community support. However, these areas often come with a higher cost of living. As a result, LGBTQ+ people may face a cost-of-living penalty, effectively paying more for housing and everyday expenses in exchange for living in communities where they feel safe and included (T. Underwood, 2024). Recent trends in the policy landscape have further complicated these choices: with a rise in anti-LBGTQ laws throughout the United States, families with LGBTQ members sometimes feel forced to relocate to more inclusive states, even if it means moving somewhere with a higher cost of living to protect their well-being (T. Underwood, 2024). Relocating for safety can drain savings and disrupt careers, contributing to financial instability. Moreover, those who remain in non-affirming regions may have limited access to LGBTQ-friendly financial services or face discrimination in employment and housing that directly impacts their finances (NEFE, 2022; T. Underwood, 2024). For example, one-third of LGBTQ+ adults in a 2022 study reported feeling blocked or discouraged from engaging with financial services and products due to bias or inequitable design in those services (NEFE, 2022). Bias in contexts like banking, lending, or leasing an apartment, whether overt or subtle, can hinder LGBTQ individuals' ability to build credit, secure loans, or accumulate assets.

Understanding these unique challenges is crucial for FCS teachers. It highlights why a generic personal finance lesson, designed for the "typical" student with assumed family support and no concerns about discrimination, may fall short. Instead, an inclusive financial education acknowledges that LGBTQ+ students might be facing higher hurdles, such as financing their own education without parental help, choosing a first job based on health insurance coverage for a same-sex partner or gender-affirming care, or budgeting for a potential move out of an unsupportive environment. By incorporating these topics into classroom discussions, FCS educators validate the experiences of LGBTQ+ youth and equip all students to navigate a more diverse society more effectively. This not only improves financial literacy for the individuals concerned but also promotes empathy and understanding among classmates, contributing to a more supportive school climate.

FCS Classroom Strategies for Inclusion

FCS educators are uniquely positioned to make financial education inclusive because of the field's holistic and human-centered approach. Family and Consumer Sciences curricula inherently deal with real-life contexts, family structures, household management, career preparation, and consumer decision-making, making it a natural fit for integrating diverse perspectives. To support LGBTQ+ youth in particular, FCS teachers can adopt several strategies in the classroom:

Inclusive Curriculum Content

FCS professionals need to ensure that the examples, case studies, and resources used in personal finance lessons represent a diverse range of family types and life experiences. Rather than only depicting the traditional heterosexual nuclear family in financial scenarios, include situations relevant to LGBTQ+ individuals. For instance, a lesson on taxes or insurance can mention domestic partnerships or same-sex spouses; a discussion on budgeting could include a gay college student estranged from his family and working to support himself. By normalizing LGBTQ+ narratives in instructional materials, educators send a message that everyone is welcome in the conversation. Research by Kosciw et al. (2020) has shown that LGBTQ students feel safer and more engaged in schools with inclusive curricula, leading to improved academic and well-being outcomes. In FCS, where topics are immediately applicable to students' personal lives, this inclusivity can be immensely powerful.

Culturally Responsive Teaching Methods

FCS professionals also need to embrace pedagogical approaches that value students' cultural and personal backgrounds. This can include soliciting students' input and questions about financial issues that matter to them, using cooperative learning to enable students to share and learn from each other's diverse perspectives, and incorporating storytelling. As mentioned earlier, sharing stories from diverse groups is an effective teaching strategy in financial education (Tisdell et al., 2011). An FCS teacher might invite a guest speaker, such as an LGBTQ+ young adult or professional, to share their financial journey, or utilize profiles of LGBTQ entrepreneurs, activists, or families in lessons about financial goal setting. These narratives not only provide representation but also highlight coping strategies and resilience, which can inspire students to develop their own. Teachers should also be mindful of language and examples: using gender-neutral terms when discussing spouses/partners, acknowledging the existence of chosen families, friends or mentors who function as family, and avoiding assumptions about who handles finances in a household. Such culturally responsive tactics create a sense of belonging and respect, which is foundational for effective learning.

Safe and Supportive Classroom Climate

An inclusive FCS classroom goes beyond lesson content; it is also about creating a safe space where all students feel respected when discussing personal finance. Money is often a sensitive topic, and for LGBTQ+ youth, it may be intertwined with aspects of identity and family that are deeply personal. Ground rules for respectful dialogue are essential. Educators can set the tone by openly condemning any anti-LBGTQ remarks or biases and by affirming the dignity of each student. Encouraging empathy is key: for example, when exploring scenarios (like "what would you do if you suddenly had to pay rent on your own?"), have students consider perspectives different from their own. Inclusive financial education is also trauma-informed. Some LGBTQ+ students might have experienced family rejection, homelessness, or other traumas, being mindful of this, a teacher might offer alternative assignments if a particular topic hits too close to home or provide resources for counseling if discussions trigger anxiety. The academic tone of instruction can still be maintained while showing compassion. The payoff is a classroom environment conducive to honest questions and mutual learning. When students feel safe, they are more likely to engage with the material, ask for help, and absorb the financial lessons that will benefit them in life.

Highlighting Rights and Resources

LGBTQ+ Americans still lack explicit civil rights protections; in 27 U.S. states, it is legal to deny housing to someone based on their sexual orientation or gender identity (L. Underwood, 2021). These realities underscore the need for an inclusive curriculum to highlight legal rights and community support systems.

Integrating these topics aligns with the core mission of Family and Consumer Sciences. The FCS discipline is rooted in meeting the basic human needs of individuals, families, and communities, which naturally extends to advocating for the well-being of marginalized groups (Cox & Alexander, 2024). Braun and Williams stated, "Engaging in public work, and especially public policy, is an element of our professional heritage" (p. 13). In other words, FCS educators have long been called to address social issues that affect everyday life. Incorporating LGBTQ+ rights and resources into lessons is a modern reflection of that mission, ensuring all students are prepared to navigate and improve the world around them.

In practice, an inclusive personal finance unit could cover a range of equity-focused topics:

- Workplace rights, which include understanding non-discrimination laws and knowing how to evaluate a company's LGBTQ+ inclusivity policies when job searching (e.g., policies on partner benefits or gender-inclusive healthcare).
- Family financial planning, which includes discussing the financial steps for LGBTQ+ family formation, from navigating adoption or fertility treatment costs to estate planning for unmarried partners and legal protections for same-sex parents.
- Community resources, which include identifying supportive financial institutions and services, such as LGBTQ-friendly banks or credit unions, and local LGBTQ community centers that offer financial counseling, legal aid, or housing assistance programs.

By embedding these practical resources into the curriculum, educators provide students with tools that extend beyond the classroom and into their lives. This kind of knowledge is empowering, it prepares LGBTQ+ youth to advocate for themselves and make informed decisions about their lives. Just as importantly, it educates all students about social equity

issues and their role in civic life. The American Association of Family and Consumer Sciences affirms in its diversity statement that it, "celebrates… the value of every person" and "denounce[s] all expressions of hate, racism, injustice, and discrimination," committing to improve the well-being and quality of life for individuals, families, and communities (Duncan et al., 2022). Teaching about rights and policies in FCS upholds this commitment by fostering respect, empathy, and informed citizenship among students.

For instance, an inclusive lesson on housing might have students examine a renter's rights brochure in conjunction with a unit on finding and financing housing. In that context, the teacher can point out that in many jurisdictions it is illegal for landlords to discriminate against tenants based on sexual orientation or gender identity, while noting that such protections are not universal (L. Underwood, 2021). Discussing why specific laws exist and how policy gaps impact people's finances makes the connection between personal finance and public policy tangible. Students can see how policy and personal finance intersect, which can motivate them to engage in civic life and even advocacy. This approach resonates with the longstanding FCS ethos of linking household well-being to community vitality: practitioners are expected to address the basic needs of individuals, families, and communities through their work (Cox & Alexander, 2024). Weaving LGBTQ+ rights and resources into financial education not only equips vulnerable youth with crucial knowledge but also fosters a generation of socially aware consumers and citizens, fulfilling the broader FCS goal of strengthening families and communities together (Ahmed & Renwick, 2024).

Addressing Mental Health and Financial Stress

Given the prominent levels of financial anxiety reported among LGBTQ+ individuals, FCS classes can also acknowledge the emotional side of money management (Watson et al., 2023). Incorporating discussions about how stress can impact financial decisions, or how financial difficulties can affect one's mental health, validate students' feelings and promotes a comprehensive approach to well-being. Teachers might introduce stress-management techniques in the context of financial planning (e.g., budgeting as a form of gaining control and reducing anxiety or seeking social support when facing money problems). The inclusive empowerment model (IFWEM) explicitly includes the "affect" dimension, essentially, the emotions and confidence around finances, reinforcing that successful financial education should help students feel more positive and in control of their financial lives (Lurtz & Komarow., 2021). For LGBTQ+ youth who may internalize negative messages or doubt their future due to societal prejudices, developing a sense of financial self-efficacy can be genuinely life-changing. FCS educators, often trusted adults who teach life skills, are well-positioned to impart this encouragement. A simple but meaningful classroom practice could be celebrating small financial wins or growth in knowledge, thereby building students' confidence.

By weaving together these strategies, inclusive content, responsive methods, supportive climate, rights education, and attention to emotional well-being, FCS teachers can create a classroom experience that not only improves financial literacy for LGBTQ+ students but also actively empowers them. An inclusive approach ensures that no one is left behind: all students gain from learning in a diverse environment, and those with greater obstacles receive the understanding and guidance they need. Moreover, this approach aligns with the professional practice of many financial educators, who tailor their curricula to meet learners' needs, confirming that inclusion is both feasible and effective (Tisdell et al., 2011).

Community-Based FCS Education and Partnerships

Inclusive financial education should extend beyond the classroom walls. Community-based FCS programs, such as those run by Cooperative Extension, community centers, and nonprofits, play a pivotal role in reaching LGBTQ+ individuals and supporting their financial capability. Family and Consumer Sciences professionals in the community often offer workshops, seminars, and one-on-one coaching on personal finance topics. There is growing recognition that these services must be culturally competent and affirming to be effective.

One positive trend is that many extension and community programs are adopting explicit inclusion policies. For instance, the University of Maryland Extension's financial education programs state that they are open to all, regardless of gender identity or expression, or sexual orientation, ensuring that LGBTQ+ community members know they are welcome (University of Maryland Extension, n.d.). Such nondiscrimination commitments are a baseline; however, true inclusion goes further by actively tailoring programs to the specific needs of the audience. Community educators have reported that they modify curriculum materials to reflect learners' life circumstances and fill in content gaps as needed (Tisdell et al., 2011). In practice, this might mean a financial literacy workshop for youth at an LGBTQ+ center incorporates scenarios about managing money after being kicked out of home or covers how to find LGBTQ-friendly healthcare financing options. It could also mean simply holding classes in safe, affirming spaces, like partnering with a local LGBTQ youth organization, to encourage participation from those who might feel uncomfortable in a traditional classroom or extension office. The community setting offers flexibility to meet learners where they are, both literally and figuratively.

Another approach in community FCS education is leveraging the concept of chosen family in financial socialization. Research suggests that for many LGBTQ+ people, especially those estranged from their families of origin, chosen family, close friends, mentors, or community members, becomes an important source of emotional and sometimes financial support (Callaway, 2022). FCS practitioners can engage these support networks in financial education initiatives. For example, a community financial management course could invite participants to bring a trusted friend or partner along, thereby reinforcing learning through social support and encouragement. Group-based programs can foster peer learning and mentorship, effectively building a community of practice around financial empowerment. A case in point: some financial literacy programs have created support groups where learners encourage one another's progress, for instance, saving circles or investment clubs. Given the higher isolation that LGBTQ+ youth can experience, such community-building around financial goals can reduce loneliness and provide role models. It echoes the finding that sociocultural factors and family legacies shape learners' attitudes and behaviors, if one's biological family did not provide positive financial socialization, a community program can fill that gap by offering new narratives and expectations around money management (Tisdell et al., 20211).

There are also national and local initiatives aimed explicitly at LGBTQ+ financial empowerment that FCS professionals can draw upon or collaborate with. For instance, the Center for LGBTQ Economic Advancement & Research (CLEAR) offers financial workshops and counseling specifically tailored to the needs of LGBTQ+ individuals. Some school districts and states have begun considering or implementing inclusive personal finance curricula as part of diversity and equity efforts (NEFE, 2022). An FCS educator engaged in community outreach might partner with Pride organizations to conduct financial literacy sessions during Pride Month or collaborate with Genders & Sexualities Alliance (GSA) clubs in high schools to integrate financial skill-

building activities with LGBTQ+ youth leadership initiatives. By positioning financial education as an integral part of broader youth development and community well-being, these efforts underscore that financial literacy is not just a personal benefit but a community asset. When LGBTQ+ individuals are more financially secure, entire communities benefit through reduced poverty rates, increased entrepreneurship, and a more robust consumer base that can participate fully in the economy (T. Underwood, 2024). Inclusive financial education contributes to community vitality, a core concern of FCS, by fostering both economic stability and social inclusion.

It is essential to acknowledge the crucial advocacy role that FCS professionals can play. Community-based FCS education often intersects with policy and systems change. For example, extension agents collecting data on local clientele might notice trends, such as that LGBTQ+ participants frequently encounter barriers when trying to access small business loans and bring those observations to policymakers or financial institutions. FCS professionals have a history of consumer advocacy, and in the realm of inclusive finance, they can amplify the voices of marginalized groups. Whether it is supporting financial education mandates in schools (an idea strongly supported by LGBTQ respondents in surveys (NEFE, 2022)) or advising on the design of financial products that do not inadvertently exclude nontraditional families, FCS experts serve as a bridge between the community and decision-makers. This systems-level engagement complements direct education by ensuring that the broader environment becomes more equitable and supportive of the financial well-being of LGBTQ+ individuals and families.

Conclusion and Recommendations

Inclusive financial education in the FCS classroom is both a matter of equity and effectiveness. When students see their realities reflected and respected in the curriculum, they are more likely to engage and learn. FCS educators have the opportunity and responsibility to support LGBTQ+ youth by preparing them for future financial challenges while also fostering a classroom culture of empathy and inclusion. Research shows that LGBTQ+ individuals face unique financial obstacles, from losing family support and experiencing higher rates of poverty to facing discrimination in economic life, which call for targeted educational interventions (Carpenter et al., 2024; T. Underwood, 2024). By utilizing models like IFWEM and principles of culturally responsive teaching, teachers can empower these students with the knowledge, skills, and confidence necessary to enhance their financial well-being. Additionally, FCS's community-oriented approach means this work can extend to families, in all their forms, and local communities, creating a stronger support network for youth.

While the examples discussed reflect the U.S. FCS context, the themes of inclusion, financial capability, and youth well-being are central to the global Home Economics mission. Whether the readers are FCS teachers, curriculum developers, or community educators, looking to incorporate the insights from this discussion into practice, the following recommendations and considerations are offered:

Integrate Diversity in Financial Examples

Review and update your financial education materials to include examples, case studies, and visuals that depict LGBTQ+ individuals and other underrepresented groups. Representation is important; a minor change, such as showing a same-sex couple in a budgeting exercise, can significantly improve student inclusion. (Tisdell et al., 2011)

Create an Affirming Learning Environment

Create a classroom or workshop atmosphere that is safe and respectful for everyone. Clearly establish rules against bullying or offensive language, and openly support LGBTQ+ students, for example, by displaying a small Pride flag or sharing your pronouns. An inclusive environment fosters open and honest conversations about sensitive financial topics.

Use Empowerment-Based Teaching Methods

Employ pedagogies that give students agency and acknowledge their context. Encourage storytelling, peer sharing, and project-based learning that allow students to explore financial topics relevant to their own lives. This might involve, for example, a project where students research the cost of living in various cities known for LGBTQ+ communities and factor that into career and financial planning, combining practical skills with real-world relevance (T. Underwood, 2024).

Address Unique Topics Head-On

Do not shy away from financial topics, especially those relevant to LGBTQ+ individuals. Talk about issues like managing healthcare costs for transition-related care, understanding legal rights in financial matters such as credit discrimination and housing rights, or saving for family-building options. If you are not an expert, consider bringing in trusted resources or guest speakers. Sharing this information addresses a vital gap for students who might not find it elsewhere.

Collaborate with Community Resources

Connect your classroom with the broader community. For example, collaborate with local LGBTQ+ centers, financial planners specializing in LGBTQ+ clients, or college and university LGBTQ+ resource centers to cohost financial education events or panels. Such partnerships can enhance your program and give students real-world examples of community support networks they can access.

Continuously Educate Yourself

Inclusive education is an ongoing practice. Stay informed on the latest research about LGBTQ+ economic issues and effective teaching methods. Professional development, such as workshops on diversity, equity, and inclusion or webinars on culturally responsive financial education, can boost your ability to serve all students. Engaging with professional organizations (like AAFCS or financial education networks) and diversity initiatives will help keep you updated on best practices (Duncan et al., 2022; T. Underwood, 2024)

Evaluate and Adapt

Finally, seek feedback from your students (confidentially, if needed) about whether they feel included and what additional support they may need. Use assessments not just to measure financial knowledge gained, but also to gauge changes in students' confidence and attitudes (affective outcomes). If LGBTQ+ students report remaining concerns or if specific topics seem to resonate poorly, be prepared to adapt. Inclusive teaching is a learning process for the educator as well, requiring reflection and flexibility.

By implementing these recommendations, FCS professionals can work toward a truly inclusive financial education that provides every student with the tools for financial success. In doing so, we uphold the core mission of Family and Consumer Sciences: to improve the well-being of individuals, families, and communities, and specifically respond to the call to uplift those in our classrooms who have historically been marginalized. An inclusive FCS classroom not only boosts financial literacy outcomes for LGBTQ+ youth but also demonstrates the values of diversity, equity, and compassion, preparing all students to succeed in an increasingly diverse society. As research and practice continue to develop, FCS educators will stay at the forefront, helping to ensure that no young person's financial future is limited by who they are or whom they love (Carpenter et al., 2024; T. Underwood, 2024).

To extend this conversation and encourage global dialogue across the Home Economics community, the following provocations are offered to prompt reflection and action:

- What would it mean for the global Home Economics profession if financial education were intentionally redesigned around the lived experiences of marginalized youth, rather than adapting existing models that were not built with them in mind?
- How might Home Economics educators worldwide radically rethink financial literacy curricula so that empowerment, belonging, and identity affirmation are treated as core financial competencies rather than optional enhancements?
- In a rapidly changing world, how can international Home Economics professionals collaborate to define a shared vision of inclusive financial well-being that is culturally responsive across regions but unified in its commitment to justice?

Together, these provocations encourage the global Home Economics community to think boldly about the future of inclusive financial education. By engaging with these questions, professionals across regions can deepen shared understanding, ignite innovation, and reinforce the collective commitment to equity and well-being. As the field continues to develop, embracing these challenges with purpose and teamwork will help ensure that every young person, regardless of identity, background, or circumstances, has access to the knowledge, resources, and support necessary to build a safe and empowered financial future.

Biography

Stephen Molchan *is a PhD candidate in Family and Consumer Sciences Education, focusing his research on LGBTQ+ financial literacy and the factors influencing financial well-being within marginalized communities. Drawing on his professional expertise as an Enrolled Agent credentialed through the Internal Revenue Service, he brings over a decade of experience in accounting and taxation to his academic work. His research integrates insights from both personal finance education and identity-informed financial strategies to address gaps in existing literature and practice. Stephen's goal is to advance inclusive financial education that empowers individuals to achieve long-term stability and security.* ***Email****: smolchan@ttu.edu*

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VIEWPOINT PAPER

Home Economics Contribution to UNESCO's New Social Contract for Education

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Abstract

In September 2024, the United Nations held a Summit of the Future: Multilateral Solutions for a Better Tomorrow. *In this context, UNESCO is interested in the role of governance in forging a new social contract for education to replace the neoliberal, capitalistic current contract. This conceptual paper explores the potential role of home economics in the governance process inherent in creating this new social contract for education. With its focus on the family as a social institution, home economics has a unique opportunity to socialize individuals and families to become active change agents who can influence governance leading to a social contract for education predicated on education being a human right for individuals and a common good for the collective. In their proposed governance role, home economists can help families appreciate that they are a social institution, view themselves as part of a governance flotilla, learn the critical science perspective, learn participatory action skills, value a futures literacy and an entrepreneurial attitude, and draw on the human ecosystem perspective to garner the power of the interdependent collective.*

KEYWORDS: **HOME ECONOMICS, SOCIAL CONTRACTS, EDUCATION, SOCIAL INSTITUTIONS, FAMILIES, GOVERNANCE, UNESCO**

Introduction

This conceptual paper concerns the United Nations Educational, Scientific, and Cultural Organization's (UNESCO) (2022a, 2022b) initiative for a new social contract for education and the role that home economics can play in this process. The document is called *Forging a new social contract for education: Perspectives on governance* (UNESCO, 2022a). We were moved to respond to this document about governance, education, and social contracts because we felt this aspect of home economics practice was underdeveloped especially the governance and social contract notions. We reasoned that with richer knowledge of these aspects of practice, home economists would be more inclined to be swayed by UNESCO's vision of a new social contract for education grounded in governance.

Piscopo, S., & McGregor, S. L. T. (2025). Home Economics Contribution to UNESCO's New Social Contract for Education. International Journal of Home Economics, 18(2), 165-175.

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A contract is an agreement that specifies certain rights and obligations between two or more mutually agreeing parties. In a *social contract*, citizens consent (implicitly or explicitly) to give up some of their freedoms and rights and yield or submit to an authority (often government) in exchange for protection of their remaining rights or to make sure the social order is maintained. *Social order* refers to the degree to which society is stable and orderly in part because citizens have agreed (in the social contract) to accept and maintain existing *social structures* to minimize chaos and disorder (Castiglione, 2015).

Social structures are arrangements that organize groups or a society (e.g., the class system, schools, and religion). In contrast, *social institutions* are specific social structures intentionally designed to meet basic *social needs* (e.g., food, water, shelter, security, health, communication, transportation, and employment). Examples of social institutions include the family, education, the economy, politics, the labour market, media, the justice system, and health care. An orderly and stable society depends on social institutions helping people meet societal needs (Deji, 2011; Garcia-Alexander et al., 2017).

For a society to be orderly and stable, people must be *socialized* into it as members, who in turn must be nurtured, maintained, and replaced. A stable society further depends on the production and consumption of goods and services; hence, the powerful role of the economy, labour market, and marketplace institutions. An orderly society also depends on legal and judicial systems, political systems, and economic systems. Of note herein, the education system transmits knowledge and culture to societal members to bolster social order (Deji, 2011; Garcia-Alexander et al., 2017).

Indeed, education itself is often viewed as a social contract—"an implicit agreement among members of society to cooperate for shared benefits" (UNESCO, 2022b, para. 4). Citizens agree to avail themselves of education provided by the government and/or the private sector, and the nation and economy benefit from an educated populace. However, contracts are often imbalanced, and both parties can be in breach. Indeed, UNESCO's International Commission on the Futures of Education (ICFE) (2021) faulted the existing social contract for not being inclusive enough and lacking a focus on both rights and the collective; it thus claimed that a new social contract is needed for education.

To continue, ICFE (2021) urged that any "new social contract [for education] needs to overcome discrimination, marginalization, and exclusion. We must dedicate ourselves to ensuring gender equality and the rights of all regardless of race, ethnicity, religion, disability, sexual orientation, age, or citizenship status" (p. 5). Although governments contract with society to provide education, and society agrees to be educated, experience has shown that what is ultimately available, and citizens' actual level of engagement, is inadequate for meeting the needs of an orderly society. Things must change.

UNESCO's Proposed Social Contract for Education

To that end, UNESCO was interested in the role of *governance* in forging a new social contract for education (ICFE, 2021; UNESCO, 2022a). Governance is the process of making and enforcing decisions within a society (Bevir, 2012). UNESCO's interest in governance stemmed from the United Nation's (UN) planned September 2024 *Summit of the Future: Multilateral Solutions for a Better Tomorrow*. The UN is deeply concerned about gaps in global governance.

Respecting this concern, UNESCO is holding the development of a new social contract for education to a different set of governing principles than what materialized with the current contract. The latter reflects a (a) neoliberal ideology (e.g., privatization, deregulation, decentralization, and individualism); (b) capitalist business model; and (c) numbers-driven game of competition and standardization (ICFE, 2021; UNESCO, 2022a). "The rational and data-driven modes of governing educational systems are dramatically distinct from the … qualities of practices of caring (serving and teaching)" (Tarc et al., 2024, p. 302).

Unfortunately, under the terms of this social contract, too many people are being left behind and left out. Society is not being served by its education system. Citizens did not get what they bargained for or needed. Tax monies paid on education (instead of some other rights) did not generate the education that society needed. The trade-offs on both sides left too many disadvantaged (Apple, 2006; ICFE, 2021). To mitigate the damage caused by the current social contract for education, ICFE (2021) argued that the new one must be predicated on foundational principles other than neoliberalism, namely "(1) the right to education and (2) a commitment to education as a public societal endeavour and a common good" (p. 11). As do all caring professions (Tarc et al., 2024), we maintain that home economists have a role to play in perpetuating this new governance approach.

Role of Governance in Social Contract for Education

ICFE (2021) and UNESCO (2022a) are especially concerned with the role of governance relative to a new social contract based on different foundational principles, which include but are not limited to cooperation, justice, solidarity, participation, inclusion, diversity, and trust. Govern is from Greek, *kuberman*, 'to steer' (Harper, 2025). The assumption that governance is the purview of governments has been challenged. To illustrate, Webb (2005), who developed the notion of *sustainable governance*, asserted that, although

> the state has certain significant advantages in terms of governing when compared with nonstate actors, it doesn't have a monopoly on effective, efficient, and responsive governance approaches—whether they entail institutions, instruments, or processes. Sustainable governance recognizes and draws on the largely untapped potential of the private sector, the third (voluntary) sector and individual citizens to assist in governing. (p. 246)

Like mindedly, Rajabifard and Box (2009) clarified that "governance is a 'steering' function, providing leadership and an enabling framework for collective decision making" (p. 1). They likened governance to steering a flotilla (i.e., a small fleet of ships or boats) with the flotilla containing independent yet interdependent vessels (e.g., stakeholders and agents from many sectors). To keep everyone on course, whomever is steering (per Webb's, 2005, assertion that it may not be government) "must provide an unambiguous definition of the collective and individual responsibilities for decision making, implementation and evaluation, together with the mechanisms that enable these" (Rajabifard & Box, 2009, p. 3). Our intent with this paper is to explain how home economics can contribute to UNESCO's revisioning of education (from a governance perspective) and the social contract that guides education.

Home Economics Contributions to UNESCO's New Social Contract for Education

The 125-year-old profession is optimally primed to offer a family-oriented approach to governance pursuant to a new social contract for education. Home economics' mandate is to strengthen and empower families as a key social structure and social institution (Brown & Paolucci, 1979). One of its main instruments to this effect is home economics education (International Federation for Home Economics [IFHE], 2008). As a caveat, we assumed that home economics professionals automatically teach and educate regardless of their career path. That said, McGregor and Yoo (2022) explained that

> home economics education involves teaching home economics to non-home economists including school children, college and university students, and adults within the general populace. This education helps people *learn* about home economics and *from* home economists and the powerful role they play in their lives. Through home economics education, people can gain knowledge, clarify values, and take inspired action relative to the concerns of everyday living. (p. 1)

That makes home economics a key stakeholder for the creation of any new social contract for education. Not only is it one of the vessels in the flotilla that is governing this process, but it is also empowered to help families assume this responsibility as well. Upon reading UNESCO's (2022a) call for contributions to a collection about governance, intended for release prior to the *Summit of the Future* (see final collection at Tawil & Toukan, 2024), we focused on *Enquiry 4: Strengthening capacity*, leadership, and learning, which was framed thus:

> What capacities do States and other stakeholders need [in order] to effectively govern increasingly complex landscapes, players, purposes, and spaces, of education? What processes for capacity building, training, and leadership development are needed? How can research, and innovation contribute to forging a new social contract for education? (UNESCO, 2022a, p. 4).

Home economists are guided by their belief in the family as a pivotal social institution that fulfils key functions as the bedrock of society. A society renews itself through families. Thus families (regardless of what they look like) must add new members and then provide physical, emotional, and financial care; maintenance; socialization; social control; protection; and morale for its individual members and the family unit (Brown & Paolucci, 1979; McGregor, 2009; Sokalski, 1992). What do families need to know and do to help create and then respect the terms of a new social contract for education? What capacities should home economists strive to instill in families so they, as a responsible and accountable social institution, can be more effective governing partners? Based on extensive reflection on UNESCO's vision (ICFE, 2021) and home economics' mission and vision (Brown & Paolucci, 1979), we propose and discuss six ways that home economists can contribute to this endeavour (see Table 1).

Table 1 Home Economics' Contributions to UNESCO's New Social Contract for Education

- Help families appreciate that they are a social institution
- Help families view themselves as part of the governance flotilla
- Teach families the critical science perspective
- Teach families skills from the participatory action domain of learning
- Teach families skills for futures thinking and an entrepreneurial attitude
- Help families view education as a human right and a common good

Families as a Social Institution

To ensure their voice is heard and respected amongst others in the governance flotilla, home economists must inculcate in families the idea that they more than a standalone unit or household. They are a social institution with responsibilities to society. Institution is from Old French, *institucion*, 'foundation' (Harper, 2025). Social institutions are the load-bearing part of human life—the machinery through which humans organize to meet their basic social needs. Social institutions provide structure, established practice and procedures, patterns of behaviour, traditions, role expectations, and a system of relationships that helps people meet their needs and improves chances of human survival and flourishing (Barnes, 1942; Bogardus, 1922).

Each social institution, especially families, plays a vital role in how society functions. Whether healthy or not, institutions tend to be enduring and stable. The rules that govern specific institutions are usually ingrained in basic cultural values. Home economists must help people appreciate that the family social institution is very important and interdependent—dependent on other institutions—meaning families must also be aware of what is going on in these institutions including education as a social contract (Barnes, 1942; Bogardus, 1922).

Families Key Part of Governance Flotilla

In this regard, the home economics profession could be faulted for asking too much of families. However, as families are part of the social contract for education, wherein their tax dollars are being used to sustain the system for everyone, they have a responsibility to be attuned to the politics of governance. Instead of families just rowing along independently in the system, fending for themselves, they must learn to view themselves as an interdependent part of the flotilla and maybe even take the lead on where to steer the flotilla into the future (per Webb, 2005).

Indeed, Kawalek and Wastell (2008) explained that the identity of the leader governing a flotilla often changes as the situation and context changes. Moving in the right direction requires shifting from alignment to innovation and then expedience followed with alignment ad infinitum. Home economists would help people to become cognizant of these shifting roles and objectives and to accept that families have every right to step into and assume this governance responsibility.

Critical Science Perspective

To participate in forging and implementing a new social contract for education, home economists must use a critical science approach to help families learn how to critically analyze the current system instead of just critiquing or complaining about it. Families must be able to intuit power dynamics and discern who wields influence and control over the education system in all its manifestations (McGregor, 2006, in press): daycare, public school, private school, home schooling, tertiary education (e.g., colleges, technical institutes, and universities), and lifelong learning.

Employing the critical science lens requires learning three new languages: (a) the language of critique, (b) the language of possibility and potential and (c) the language of action (Rehm, 1999). First, using the *language of critique* (from Greek, *kritikós*, 'discerning, capable of judging') (Harper, 2025), people can uncover hidden or unspoken assumptions, ideologies, and values. In this process, they slowly gain critical insights and critical consciousness with people ultimately realizing they have the power to effect change. With self-reflection, people gain insights into their thoughts and behaviour (and that of others) and can reframe things in a more positive light conducive to their rights and that of the common good. When people frame and name a problem (problematization), they gain more control over marginalized and exploitative situations. A detailed analysis and critical assessment of society (including the education system) can reveal oppressive power relations that can be challenged using the language of critique.

Second, the *language of possibility and potential* (from Latin, *potentia*, 'power') (Harper, 2025) entails exercising one's personal voice, authorship (one's own story), and agency to help achieve society's potential. Making the best possible use of resources available (including critical insights and self-power) is inherent to home economics as is ensuring that individuals and families learn empowerment and autonomy; thus, speaking up to evaluate and/or ensure that governance supports educational entitlements follows naturally from this principle. Individuals and families would come to view themselves as legitimate change agents with an obligation to influence the creation of governance models pursuant to a new social contract for education.

Third, the *language of action* depends on dialogue, consensus building, and taking collective, empowering action for solidarity to right the wrongs weighing on society, including an oppressive social contract for education. The transformative language of action is spoken by people who have found their political autonomy and opted to contribute to the formation of society. Critical science values the principles proposed for the new social contract for education (e.g., care, trust, diversity, cooperation, and inclusion) (Brown & Paolucci, 1979; Rehm, 1999). Home economists can help emphasize the value of and promote these traits as they discuss with people the notions of family-community and family-policy interactions vis-à-vis governance for a social contract for education.

Participatory Action Skills

Per the above, home economists should help families develop a roster of skills comprising the participatory action domain of learning. This goes beyond, yet complements, the cognitive domain of learning (i.e., gaining, applying, and critiquing knowledge). The participatory domain concerns empowered action for social change. The intent is to help people gain (a) an eye-opening and paradigm-shifting sense of how the world really works, (b) an appreciation for how others feel living in that world and (c) the confidence that they can affect and change that world (Diaz et al., 1999).

Relevant participatory domain skills conducive to governance for a new social contract for education include critical observation, research, argumentation and rhetoric, strategizing within awareness of context and potentialities, and anticipating and dealing with resistance by knowing one's supporters and detractors. It also includes negotiating and bargaining; debating and dialogue; networking; mobilizing; and self-reflection as well as reflexivity (i.e., awareness of one's own values, biases, and belief system and how reflexivity informs one's engagement in governance) (Diaz et al., 1999).

Futures Thinking and an Entrepreneurial Attitude

Whereas taking a critical stance on the current realities of education and individuals and families current needs can inspire home economists to revisit the current content and pedagogical activities in courses they may deliver at any level, it should also spur them to look more keenly beyond "What is in place now?" to "What would be a desirable future for individuals, families, and communities vis-à-vis a social contract for education? Home economists' participation in re-envisioning their own discipline within a larger framework of a social contract for education governance will contribute to nurturing individuals and families along a likeminded path. This should lead to future citizens who can (a) see the home and family as a context for learning throughout life and (b) seek to play a role in creating learning environments outside the home to meet prevailing, emerging, and anticipated needs.

These future citizens will need *futures thinking literacy*, which Vidergor (2023) recently described as "a meta-literacy [that] integrates [each of] language, digital/information, and scientific/critical literacies to enable [people] to think about the future in any topics or disciplines they study" (p. 1). Pouru and Wilenius (2018) further asserted that "through enhancing one's individual futures literacy, a person learns to use the future more consciously" (p. 2). This skill is sorely needed relative to creating the governance process for a new social contract for education.

Buckingham (2015) clarified that novel literacies are not created in isolation, but rather are an integral part of the social and institutional structures in which they are situated and so enable social action. Futures thinking literacy is one such example. Because a new social contract for education is part of the future, individuals and families should be exposed to futures thinking literacy. We propose that home economics is well-suited to add futures thinking literacy to its current multiple literacies (Piscopo, 2016) and then help individuals and families learn about its importance relative to education governance.

Home economists should not only nurture a futures thinking literacy among individuals, families, and communities but also a sense of agency and an entrepreneurial attitude (e.g., passion, risk taking, proactiveness, and integrity) (Wales et al., 2020). Entrepreneur is from Old French, *entreprendre*, 'to undertake' (Harper, 2025). Individual and family social entrepreneurs would embrace a futures thinking literacy as they undertake gaining (a) the visionary capacity to imagine alternative futures, (b) an open mind toward change and alternatives and (c) a commitment to collaborate for the development of such futures in an ethical manner whilst safeguarding the wellbeing of humans and natural environments. The new social contract for education and its governance would benefit from futures thinking and a futures literacy.

Education as Human Right and Common Good

Finally, to further ensure that families can partake in forging and implementing a new social contract for education, home economists must also orient people to ICFE's (2021) imperative that people view education as both a (a) human right for each person for their entire life span; and (b) common good, whereby the entire society—everyone—benefits from education. Families must be socialized to value these two principles.

Regarding education as human right, home economists must meet people where they are, so the latter can avail themselves of their right to education. To that end, home economists would offer education in a variety of contexts conducive to what people need as their life unfolds in a predictable and unpredictable manner. This means respecting that quality education must be relevant and provided in (a) formal (organized and authority-sanctioned), (b) nonformal (organized and context-specific) and (c) informal (unorganized and organic) settings.

Regarding the common good, most people view education as benefiting a particular person, which is an idea emanating from neoliberalism and individualism, the crux of the current social contract for education (Apple, 2006). ICFE (2021) strongly urged those forging the new contract to commit to viewing education as a common good, which "refers to those facilities—whether material, cultural or institutional—that the members of a community provide to all members in order to fulfill a relational obligation they all have to care for certain interests that they have in common" (Hussain, 2018, para. 1; see also Sharma & Sayed, 2024).

To continue, the selfish, individualistic nature of the current social contract for education compromised the mutual interest inherent in the common good (ICFE, 2021). Home economists could draw on a human ecosystem perspective to socialize families to respect the common good, and the collective. An ecosystem is a community of interacting organisms and their immediate environment. A human ecosystem is a community of humans interacting with four different levels of environment: human group, human-built, sociocultural (including the community and the common good), and natural (McGregor, 2020).

"Human ecology theory assumes that families are: [sic] (a) an *ecosystem* where the parts and the whole are interdependent; (b) a key democratic social *institution* that carries out functions for its members and the common good" (McGregor, 2020, p. 162). "A human ecology perspective interprets the processes, patterns, products, and mediating factors that regulate human behavior using a systemic and holistic framework that accounts for multiple factors and the interrelations between them" (Lawrence, 2014).

Indeed, from its earliest beginnings as a discipline, home economics has adopted, what Goel et al. (2010) termed, *situated learning*, which recognizes the mutually constituted nature of society and mind. The interrelationships and interactions among individuals and families, as they function in physical, economic, technological, and sociocultural environments, which are conscientiously identified, criticized, problematized, and addressed within home economics, allow for responsible, empathic, and innovative approaches to choices and actions for human betterment and a thriving world. Using this perspective, families would thus feel entrusted to pursue governance that protects and entrenches the common-good imperative in any new social contract for education.

Conclusion

This conceptual paper developed the idea that the home economics profession has the wherewithal and opportunity to socialize families into their role as a social institution in the ensuing conversation about a new social contract for education. UNESCO envisioned this contract as predicated on education as a human right for individuals and a common good for the collective. It also advocated for a governance imperative that focuses on a new set of principles undergirding the social contract: cooperation, justice, solidarity, participation, inclusion, diversity, and trust (ICFE, 2021). Drawing on a roster of recommended strategies, home economists can orient itself and families to view themselves as part of the governance flotilla that is concerned with forging a new social contract for education. This new contract will take society beyond the neoliberal ideology and capitalistic business model of education toward a model focused on human rights, the collective, the common good, and human flourishing.

Biographies

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