



# TEXTILE LITERACY OF NINTH-GRADE STUDENTS IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT

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## Abstract

*Today's world is facing a problem with the growth of textile products and in particular, textile waste, which already represents a serious environmental problem. From the point of view of ensuring sustainable handling of textile products, it is thus very important that individuals have the appropriate knowledge, attitudes and skills for sustainable handling of textile products or that they are properly 'textile literate'. After all, appropriate textile literacy enables individuals to act according to the concept of sustainable development. The purpose of this research, which included 80 students from three Slovenian schools, who had completed their lower secondary education in the 2018/2019 school year, was to find out what their basic textile knowledge was and how they transferred it into their daily lives. Ninth graders were found to be deficient in basic textile skills, with girls having statistically significant better knowledge than boys. The girls were also statistically significantly better at recognising the connection between the acquired knowledge and everyday life and achieved a better result in terms of sustainable handling of textile products. The research findings can help teachers to be aware of the critical points in textile teaching in the context of sustainable development. The results also suggest that the current placement of textile content in the fifth grade, without further upgrading of the content in higher grades is not optimal. Most of the surveyed students had high grades in the fifth grade, but knowledge that is vital from the point of view of the sustainable behaviour of an individual is low in the ninth grade. These results can provide useful information for school policy makers who want to follow modern concepts of sustainable development.*

**Keywords:** *active learning strategies, cross-curricular integration, ninth-graders, sustainable development and textile literacy*

## Introduction

Home Economics is extremely important nowadays because it addresses learning content that is strongly related to human life (Forster et al., 2016). Smith and DeZwart, (2010) argued that household skills is an elementary school subject where teachers can prepare a variety of activities that are meaningfully related to other elementary school subjects and everyday life. Research (Forster et al., 2016; Turkki, 2005) also showed that teaching and learning household skills is very important for individual development, functioning and integration into society, use of knowledge and skills in everyday life, responsibility awareness, and sustainable use of resources. Lind and Veeber (2015) stated that the first practical work related to the household was related to cooking and sewing, and that other practical work and manual skills were gradually included in household lessons. Research by Paas and Palojoki (2019) showed that teachers in the subject of housekeeping strive to maintain manual skills and practical instruction, as they believe that students gain a lot of experience that leads them to further research and problem solving and that this is an excellent connection for mind, hands, and eyes. They also stated that it is necessary to include various practical works and manual skills in household lessons, such as sewing with a sewing machine, cooking, washing clothes, and maintaining clothes and shoes, to prepare students for life situations and to keep them alive. It would also

mean that they would not be afraid of doing any household chores. Among the reasons for the fact that most of the teaching about household skills is dominated by theoretical teaching is because of the poor material and lack of a technical base for teaching and that teachers are not educated in the skills required to master active methods of work. Kafai (1994) stated that the inclusion of active methods and forms of work is extremely important for students, so that they can independently carry out the activity and make a product that they can use in everyday life. In addition to practical work, experimentation, and didactic games used by teachers in active teaching, authentic tasks, which are composed in such a way that students independently explore learning content and solve problems on concrete examples from life and thus expand their existing knowledge, can also be added. This way, students can gain ideas of how to integrate this knowledge into everyday life and acquire new skills and abilities (Pöllänen & Vartiainen, 2011). Rule (2006) emphasised that the inclusion of authentic tasks in lessons is extremely important, as the considered learning content is transferred to concrete life cases, which motivates and encourages students to research and learn. The use of authentic assignments affects the student's understanding of the learning content but also points out that such a way of teaching must be used correctly if we want to achieve an appropriate level of knowledge (Rule, 2006).

Another one of the active learning strategies is inter-disciplinary integration, which enables horizontal and vertical integration of learning content, allowing the upgrading of acquired knowledge with new knowledge and experience. At the same time, it enables students to correctly connect the acquired concepts of one subject with other subjects, helps to develop logical and systemic thinking, and to transfer the acquired knowledge more successfully into everyday life (Sicherl-Kafol, 2008). The integration of cross-curricular integration into the teaching process can be based on different practical skills, using different learning strategies (Širec et al., 2011). The nine-year primary school Home Economics curriculum states that the subject of a household can be linked in a multidisciplinary and interdisciplinary manner to all compulsory subjects in elementary school and that these links may be different (Curriculum. Primary school program. Home Economics, 2011).

A teacher, with a properly chosen learning strategy, strengthens a complex ability in students, which we call literacy. This ability is what an individual needs to achieve their own goals and perform daily activities. The definition of literacy has changed significantly in the last decade due to the rapid development of information and communication technology (Knaflič, 2002). In the dictionary of the Slovene standard language, the term literacy is defined as the knowledge of reading and writing, which is of key importance for the acquisition and understanding of new concepts (Nemec et al., 2014). Prepadnik (2016) stated that each individual can develop literacy in the cognitive, linguistic, sociocultural, developmental, and educational fields in all subjects. Individual literacy can be reflected in the following areas: (1) education, (2) employment, (3) job performance, (4) quality of life, (5) use of information for daily tasks, (6) leisure time, and (7) general visibility (Knaflič, 2002). According to the different learning contents that students learn about the subjects, the following areas of literacy were formed: (1) science literacy, (2) mathematical literacy, (3) information literacy, (4) music literacy, (5) household literacy, (6) textile literacy, etc.

The definition of textile literacy can be formed based on the learning content that students gain about the subject of a household. An individual is, therefore, textile literate when he or she can integrate textile knowledge and awareness of the importance of proper handling of textiles into everyday life. An example of a textile literate person is an individual who knows how to deduce the raw material composition of a textile product from a textile label and knows how to properly maintain this garment or how to handle this garment sustainably from purchase to disposal (Van der Merwe et al., 2014). The latter research also showed that consumers know what the purpose of textile labels on clothing is, but that understanding of the information

written on the labels is lacking, as survey participants did not recognise the raw material composition of clothing and how clothing should be handled properly. Additionally, consumers do not follow the instructions for the maintenance of textile products, as in the practical work the products are washed, dried, and ironed at their discretion. The research (Van der Merwe et al., 2014) also pointed out the poor knowledge of product maintenance labels - a small percentage of consumers recognised the symbols or labels for bleaching, drying, and washing textile products. The latter research also suggests that consumers read information about the raw material composition of the product and its maintenance when buying textile products, but it turned out that in practice this information is not considered (Van der Merwe et al., 2014). Viswanathan and Gau (2005) said that information on textiles can only be understood by those who are educated in the field and are literate. Sonnenberg and Erasmus (2005) argue that despite the availability of information on a textile product, there are still many consumers who do not understand it and do not know how to use it in everyday life, leading to the reckless purchase of a textile product. Maqalika-Mokobori (2005) said that, depending on the composition and material of the garment or textile product, consumers should know how to properly care for and maintain it, without the help of information written on textile labels.

As demand for clothing and other textiles has increased sharply among consumers, various organisations have opted to make people aware of the proper disposal methods and sustainable use of textiles (Weber et al., 2017). The latter research also draws attention to the problem of disposing of textile products in nature, as some clothing is composed of materials that can cause pollution in the environment during decomposition. To prevent and reduce environmental pollution with textile waste, the authors of the study (Weber et al., 2017) decided to make people aware that they can donate, exchange, sell, recycle, or reuse their clothing that they no longer need. Used textiles can be made into another textile product. To start raising awareness about the reuse of textiles in primary school, household classes should encourage students' creative thinking about the usefulness of buying clothes, their maintenance, and sustainable use (Van der Merwe et al., 2014). Viswanathan and Gau (2005) therefore suggest that the importance of textile literacy is emphasised in the future and that students and other consumers be educated so that they understand the importance of textile labels, follow the instructions for the care and maintenance of textile products, and their raw material composition, and thus learn to handle resources sensibly and sustainably. In doing so, they will follow the concept of sustainable development, defined by the Bruntland Commission as: 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED, 1987, p. 43).

### *Research Problem*

Advances in information and communications technology have also contributed to rapidly changing fashion trends, which is reflected in: (1) an increase in the amount of surplus clothing, (2) poorer quality and lower textile prices, (3) a limited number of trendy textiles and (4) rapid exchange of textile products by consumers. The high demand for textile products by consumers also affects the environment, as consumers dispose of excess and unused textiles in landfills, where they remain for many years. Due to the presence of many chemicals used by the textile industry's processing and manufacturing of textiles, improper handling of clothing pollutes natural resources such as water, air, and soil (Weber et al., 2017). To reduce the consumption and needless purchase of textile products by consumers, they need to be properly made aware and educated. In accordance with Slovenian legislation, the contents of textiles are taught in the 5th grade of the nine-year primary school education (when children are on average 10 years old). In the 5<sup>th</sup> grade they should obtain basic information on the textile composition, purchase, and sustainable use of textile products or they should develop basic textile literacy,

which means that: (1) they recognise the composition of the textile product, (2) based on the symbols and markings on the label they know how to properly maintain and care for the product and (3) are aware of the problems in the textile industry and the actions required to contribute to the sustainable use of textiles and the reduction of environmental pollution.

### *Research Focus*

The research problem of the research was: (1) how successful the students were in solving tasks that tested their knowledge of textiles, (2) whether students could give innovative ideas about recycling them based on the given examples of clothing, (3) whether they knew how to connect knowledge about textiles with everyday life and (4) whether there were gender differences in textile knowledge and textile sustainable behaviour.

### *Research Aim and Research Questions*

The aim of the present research was to find out what textile knowledge and behaviours (handling of textiles from planning purchases to discarding or recycling from the point of view of sustainable development) is achieved by the end of the lower secondary education process and whether there are some gender differences in these two areas.

The research questions were:

- (1) What is the textile knowledge of students at the end of their nine years in primary school?
- (2) Are there statistically significant differences between students in checking the raw material composition on the textile label in the process of purchasing a textile product?
- (3) Are there statistically significant differences between students in the sustainable use of textile products?
- (4) Do girls have more ideas for recycling old clothes compared to boys?
- (5) Are there statistically significant differences between students in the assessment of the opinion that the learning content about textiles is related to everyday life?

## **Research Methodology**

### *General Background*

The research was based on a causal non-experimental method of pedagogical research with a quantitative research approach. The research was based on a survey questionnaire, which was intended to obtain data on the textile knowledge and related behaviour of ninth-grade students. Knowing and understanding of the contents of the subject of household is important, because students can attain new knowledge, which can relate to everyday tasks. Also, students would be able to develop new skills and social abilities (McGregor, 2014). Arubayi (2009) said that students can use textile knowledge in the future when looking for a job (designers) or when buying better and more sustainable products. Home Economics classes are also suitable for the carrying out of different surveys, with which we can gain insight into the real lives of households and develop policies to promote more sustainable living for people (McGregor, 2014).

The survey was carried out in 2018/2019 school year. Students' answers were analysed with an SPSS program, using descriptive and inferential statistics.

### Sample

The research took place in three primary schools. Of the 150 expected responses only 80 were received. The reason for the low participation was the high absence of children in school, because of the flu. Of the participating students, 37 were male (46.3%) and 43 were female (53.8%). Their average grade in 5th grade in the subject of home economics was 4.4 ( $M = 1.051$ ). The sample of respondents was random and purposeful.

The research was conducted by teachers who obtained permission from the parents of children who would be included. Prior to the survey the teacher checked the parents had given written permission and only children who had parental permission to participate in the study were included in the research. The questionnaire was paper and pencil based. The students were also informed that participation in the research was voluntary and that they could leave the study at any time.

### Instruments and Procedures

The data were obtained with the help of a questionnaire entitled “Textile literacy of ninth-graders”, which consisted of two parts. With the set of questions in the first part of the questionnaire, information about the behaviour related to students’ handling with textile were obtained. A 5-point Likert scale was used for this purpose (1 - *strongly disagree*, 2- *disagree*, 3 - *undecided*, 4 - *agree*, 5 - *strongly disagree*). The internal consistency for content validity of students' textile behaviour in everyday life was tested with the Cronbach Alpha coefficient. Cronbach Alpha was 0.677 which indicates an acceptable level of reliability (Ursachi et al., 2015).

The second part of the questionnaire was intended to check the theoretical knowledge of students. It contained 12 assignments based on knowledge and understanding of learning content about textiles. This part of the questionnaire contained one open-ended task, where students independently formed an answer to the question, 5 closed-ended tasks, where students circled the correct statement from the given statements, and 6 tasks based on supplementing and linking the answers to the question. The questions that tested the knowledge covered the following learning contents (based on the Home Economics curriculum for the fifth grade of nine, primary school students): textile raw materials, mechanical processing of fibres, finishing of goods, labelling of clothes, groups of clothes, footwear, and fast fashion.

### Data Analysis

Descriptive and inferential statistics were used for the data analysis. The Kolmogorov-Smirnov test was used to check the normality of the distribution of variables. For normally distributed data the t-test was used; when data were not normally distributed the Mann-Whitney test for further data processing was used. For data analysis SPSS 22.0 was used.

The first part of the questionnaire was not specifically analysed, but the levels of the Likert scale were categorised as they are designed (1- *strongly disagree*, 2 - *disagree*, 3 - *indecisive*, 4 - *agree* and 5 - *strongly agree*).

The questions of the second part of the questionnaire were analysed in such a way that a certain level of knowledge was assigned according to the number of points achieved in each task. Levels of knowledge were categorised as follows: no knowledge, partial knowledge, and knowledge. The tasks, which had 3 possible points, were assigned to the following levels of knowledge: 0 points - *no knowledge*, 1 to 2 points - *partial knowledge*, and 3 points - *knowledge*. The tasks, which contained 7 points, were assigned knowledge levels: *from 0 to 2 points - no knowledge*, *from 3 to 5 points - partial knowledge*, and *from 6 to 7 points - knowledge*. Levels of

knowledge in the task with 8 possible points were classified into the following categories: *from 0 to 3 points - no knowledge, from 4 to 6 points - partial knowledge, and from 7 to 8 points - knowledge*. In the tasks with 2 possible points, the levels of knowledge were categorised as follows: *0 points - no knowledge, 1 point - knowledge*. Open-ended questions were analysed by assigning 1 point to the correct answer and thus categorised with "knowledge", and in the case of an incorrect answer or no answer, it was marked with 0 points and categorised as "no knowledge". According to the final number of points obtained on the knowledge test, students were classified into the following categories: *from 0 to 19 points - no knowledge, from 20 to 29 points - partial knowledge, and from 30 to 40 points - knowledge*.

## Research Results

In the first part of the questionnaire (examining the knowledge of students), students were able to achieve a maximum of 40 possible points. The results of the survey showed that 51.3% of students were placed in the category of "no knowledge", as they did not achieve half of the possible points in the knowledge test. 48.8% of students were placed in the category of "partial knowledge". None of the respondents scored at least 30 points on the knowledge test and was classified in the "knowledge" category.

Comparison of the achieved results according to gender showed that the differences between girls and boys were statistically significant ( $p < .05$ ) and that girls achieved a higher number of points than boys (Table 1).

**Table 1**  
*Students' Achievement on Knowledge*

Gender	N	Mean Rank	t	df	p
Boys	37	18.32	-2.668	78	.009
Girls	43	20.47			

A more detailed overview of the success of solving individual tasks on the knowledge test is shown in Table 2.

**Table 2**  
*Success in Solving Individual Tasks*

Question	No knowledge		Partial knowledge		Knowledge	
	<i>f</i>	<i>f</i> <sup>0%</sup>	<i>f</i>	<i>f</i> <sup>0%</sup>	<i>f</i>	<i>f</i> <sup>0%</sup>
Q1 - thread structure; yarn fibre, thread	9	11.2	35	43.8	36	45.0
Q2 - mechanical process - spinning	49	61.2	/	/	31	38.8
Q3 - types of goods	18	22.5	45	56.3	17	21.2
Q4 - mechanical process - felting	65	81.2	/	/	15	18.8
Q5 - sewing buttons	51	63.8	/	/	29	36.2
Q6 - knowledge of weaving weaves	32	40.0	40	50.0	8	10.0
Q7 - enrichment of goods	32	40.0	41	51.2	7	8.8
Q8 - reading textile labels	7	8.8	53	66.2	20	25.0
Q9 - footwear	64	80.0	/	/	16	20.0
Q10 - clothing groups	17	21.2	48	60.0	15	18.8
Q11 - recycling of old clothes	45	56.2	/	/	35	43.8
Q12 - fast fashion	6	7.5	57	71.3	17	21.2

Considering the issues that are important from the point of view of sustainable consumer behaviour regarding textiles from purchase to disposal, we see that for the reading of textile labels there were 25% of students who were knowledgeable, recycling opportunities were well known by only 35 students (43.8%), footwear by only 20.0% of students, only 21.2% of participants recognised the types of goods, only 21.2% of students were aware of the issues of fast fashion. 21.2% of respondents were able to correctly classify an individual garment in an individual group, and only 8.8% of students showed knowledge of the task related to the enrichment of goods. The students showed the most knowledge (45.0%) in the task that checked the structure of the thread. Also, 43.8% of students in the task that checked the recycling of old clothes showed that they understood the importance of recycling and that they tried to design a new textile product from old clothes.

As already mentioned, the teaching of textile content is important not only from the point of view of raising consumer awareness of the purchasing process but also from the point of view of promoting sustainable behaviour in the use of clothing. Students can also transfer their knowledge about the repair of clothing or the recycling of used clothing into everyday life, thus contributing to sustainability. The results showed (Table 3) that there were statistically significant differences between boys and girls in terms of sewing torn garments ( $p < .001$ ). The results revealed that girls ( $R=50.36$ ) sewed torn clothing more often than boys ( $R=29.04$ ) in their daily lives. The results also revealed that girls ( $R=47.62$ ) had a better imagination and more ideas about designing new textiles from waste clothing than boys ( $R=32.23$ ). The difference was also statistically significant ( $p < .001$ ). Results suggest that girls are more inclined to sustainable textile products than boys.

**Table 3**  
*Sustainable Handling of Textiles*

I try to sew up a torn garment				
Gender	N	Mean Rank	U	p
Boys	37	29.04	371.500	.001
Girls	43	50.36		

  

I design a new textile product from waste clothes				
Gender	N	Mean Rank	U	p
Boys	37	32.23	489.500	.001
Girls	43	47.62		

One of the tasks in testing knowledge about sustainable behaviour was to ask students to give innovative ideas on how to transform old clothes into new ones. They had jeans, a cotton T-shirt, and an anorak available. Students gave the following ideas: a pet bed, a wallet, a shopping bag, a hair elastic, a bracelet, a plush toy, etc. Less than half of the surveyed students (43.8%) correctly answered the question about the recycling of old clothes, of which 25.0% were girls and 18.8% were boys, which suggests that girls were recycling old clothes more successfully than boys.

The students were also asked if they perceived a connection between the contents of textiles and everyday life. It was found that 70.0% of students agreed that learning content about textiles was related to everyday life. From Table 4 it can be concluded that the Mann-Whitney test showed that statistically significant differences occur between girls and boys ( $p < .05$ ) and that girls ( $R=46.59$ ) better perceive the connection of learning contents about textiles with everyday life than boys ( $R=33.42$ ).

**Table 4**  
*Connection of the Textile Content with Life*

Gender	N	Mean Rank	U	p
Boys	37	33.42	533.500	.008
Girls	43	46.59		

## Discussion

The research revealed that Slovenian ninth graders have poor basic textile knowledge, as none of the surveyed students achieved all possible points on the knowledge test. Most students (51.3%) did not score half of the possible points on the knowledge test, which indicates a lack of knowledge and a lack of understanding of the learning content about textiles. The results also indicated problems in the behavioural component of textile literacy. Respondents were



otherwise aware of the importance of recycling and reusing of clothing, but only 43.8% of surveyed students gave an example of how to make a textile product from waste material. To improve students' textile literacy in the context of sustainability it would be necessary to include more authentic tasks and practical work in the teaching process, as the use of authentic tasks and other active learning strategies in the classroom encourages learners to learn, research, deepen and solve everyday problems (Pöllänen & Vartiainen, 2011; Rule, 2006).

The results of the survey showed that only 48.8% of ninth graders scored 20 to 29 on the knowledge test and were classified in the "partial knowledge" category. None of the surveyed students scored more than 30 points on the knowledge test and were placed in the "knowledge" category. Comparison of responses revealed statistically significant differences in knowledge between students by gender; girls ( $R = 20.47$ ) scored higher on the knowledge test than boys ( $R = 18.32$ ). The results are in line with research (Viswanathan & Gau, 2005), which states that the importance of textile literacy needs to be emphasised in education, as the student and consumer textile knowledge is deficient and inadequate. With appropriate education, learners would gain basic knowledge that would enable consumers to understand textile information on products, properly maintain and care for products, and emphasise the importance of sustainable use of textiles.

The results of the third research question showed that there are statistically significant differences between students regarding the sustainable use of textile products. On average, girls ( $R = 47.62$ ) more often made a new product from old textiles than boys ( $R = 32.23$ ); girls ( $R = 50.36$ ) were also more likely to start patching or sewing old clothes than boys ( $R = 29.04$ ). The results indicate that girls think more sustainably about the handling and reuse of textile waste than boys. This may be due to the fact that girls have historically been more involved in the care, maintenance, and use of textile products than boys. Research (Turkki, 2005) showed that in the past, the main task of girls was to provide for and raise children, so they were taught basic cooking and sewing skills in the household subject. But for a final conclusion more research should be done. The sustainable use of textile products is extremely important nowadays, as the production and sales of textile products have increased due to the high demand for clothing. The impact of reckless mass shopping for clothing affects the improper handling and disposal of textile waste, as most of these end up in landfills, which in turn causes pollution of our environment (Weber et al., 2017). The results are in line with research (Weber et al., 2017), which says that individuals do not know how to handle textile waste, as it finishes up in landfills and the environment.

The results of the fourth research question showed that girls ( $N = 22$ ) have more innovative ideas for recycling old clothes compared to boys ( $N = 13$ ). The girls most often stated that they could use the old clothes to make hairbands, beds, and clothes for pets, and to make various textile toys. While the boys stated that they would try to design a shopping bag, a bag, a grass blanket, and a costume/clown from the old clothes. The results of the research showed that the awareness of students about the importance of recycling textile waste was poor, as only 43.8% of the surveyed students gave the idea of proper handling of old clothes. The results suggest that in the Home Economics subject the issue of discarded textile products should be emphasised more and that students should be made aware of the correct handling and the possibility of reusing old clothes. Weber et al. (2017) also believe that it is necessary to make students in primary school aware of the problem of disposing of textile products and make them aware that old clothes can be donated, exchanged, sold, recycled, or made into new textiles. This is a life skill they need.

The results of the research showed that in the last research question there were statistically significant differences between students regarding the given assessment of the opinion that the learning content about textiles is related to everyday life. One-tenth of students (10.0%) gave the opinion that learning content about textiles was not related to everyday life, while the

majority of the surveyed students (70.1%) gave the opinion that they agreed with the statement or completely agreed. Girls ( $R = 46.59$ ) were more skilled in connecting the acquired textile knowledge with everyday life than boys ( $R = 33.42$ ). The results indicate that the students recognised the connection between the learning content about textiles, which they learned in the 5th grade of primary school, and concrete examples in everyday life.

Forster et al. (2016), Smith and DeZwart (2010), Turkki (2005) stated that the Home Economics is the only primary school subject that deals with science and social sciences and that it is strongly related to individual needs and life experiences that affect future personal and social development. The results indicate that textile literacy in the context of sustainable development is not optimal, neither in the field of theoretical, nor in the field of applied knowledge. There should be more done to develop the curriculum in terms of highlighting the importance of the textile topic for sustainable development.

### *Limitations*

Due to the small sample, the results cannot be generalised. However, the research study revealed some critical points in textile literacy in the context of sustainable development and can be upgraded in further research study on this topic with larger samples of students.

### **Conclusions and Implications**

The results suggest that Slovenian ninth graders have a lack of textile knowledge and that they do not know how to fully connect the acquired knowledge with examples from everyday life. Textile literacy is extremely important for individuals, as it enables an easier and better understanding of symbols and written information about the raw material composition, care, and maintenance of a textile product when buying a textile product. In order for Slovenian consumers to be self-confident, determined, and critical when buying textiles, and in order for them to behave sustainably, it makes sense to start textile literacy in primary school. In this way, students can also transfer the acquired knowledge to their peers, parents, and other relatives. The acquisition of new concepts is strongly related to the method of teaching and giving learning content, so it is extremely important to include teaching methods and forms of work based on student activity and independent problem solving (practical work, experimentation, and solving authentic tasks as they are interdisciplinary connected with other primary school subjects). Therefore, it makes sense to design as many classes as possible for teachers who teach such content, within which they would learn about different strategies for successful teaching of textile content in the context of sustainability. In order to facilitate the interdisciplinary connection of household learning contents with other primary school subjects, it would also make sense to move the subject of the household to the last three years of primary education, as this would make it easier for students to integrate acquired concepts into their networked memories. This shift would enable students to better understand the learning content and encourage them to learn throughout life. At the same time, it would of course make sense for the lessons regarding this content to be upgraded over their years at school, as it is difficult to deal with the content only as a 10-year-old, from the point of view of consolidating, upgrading, and updating with new knowledge in the context of sustainability.

### **Declaration of Interest**

Authors declare no competing interest.

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