

Attitudes and Sustainable Behaviour among Slovenian Pre-Service Teachers Who Will Teach Home Economics: A Case Study

Martina Erjavšek* ** and Stojan Kostanjevec*

Department of Home Economics,
Faculty of Education, University of Ljubljana

**martina.erjavsek@pef.uni-lj.si (Corresponding author)

Abstract: Sustainable development is a key educational goal, particularly in disciplines that integrate practical life skills, such as Home Economics. This study examined pre-service teachers enrolled in Home Economics and Primary Education programmes at the Faculty of Education, University of Ljubljana, focusing on the perceived role of environmental education and environmental awareness among students and staff within a larger framework of sustainability. Data were collected through an online questionnaire completed by 97 pre-service teachers. The results showed relatively frequent engagement in routine sustainable behaviours, such as waste separation, saving paper towels and reducing food waste; while more resource-dependent behaviours, such as using public transport, were less consistently practised. Participants perceived environmental education as similarly influential on both their attitudes towards sustainable development and their own sustainable behaviour. In addition, faculty staff were perceived as more environmentally aware than students. The findings highlight the importance of strengthening environmental awareness during teacher education, as it supports the development of attitudes and behaviours relevant to sustainability-oriented Home Economics education. However, the findings should be interpreted with caution due to the use of a non-probability sample from a single institution and self-report measures.

Keywords: Environmental education, Environmental awareness, Home Economics, Pre-service teachers, Sustainable development

Introduction

Sustainable development has become increasingly central to education, with Education for Sustainable Development (ESD) aiming to equip learners with the knowledge, skills and attitudes necessary for responsible environmental and social behaviour (UNESCO, 2017). The effectiveness of ESD depends not only on curricula, but also on the competence and attitudes of teachers in integrating sustainability into classroom practice (Lamanauskas & Malinauskienė, 2024). Home Economics, with its focus on everyday life skills, resource management, nutrition, textiles and well-being, offers a natural context for fostering sustainability competencies among primary school students (International Federation for Home Economics [IFHE], n.d.).

The aim of this study was to explore the attitudes towards sustainability and the self-reported sustainable behaviours of pre-service teachers who will teach Home Economics in primary schools. These factors are important as they influence the integration of sustainability into teaching practice and, ultimately, the development of environmentally responsible behaviour among pupils.

Literature review

Sustainable development and Education for Sustainable Development

In the literature, there are numerous definitions of sustainable development and sustainability. A single, universally accepted definition does not exist, which leads to varying interpretations (Owens & Legere, 2015). The terms *sustainable development* and *sustainability* are both used (Ruggerio, 2021) in a way that reflects terminological inconsistency. Most authors (Bezeljak et al., 2020; Erjavšek et al., 2014; Hák et al., 2016; Ruggerio, 2021) refer to the widely accepted definition by the Brundtland Commission from 1987, which defines sustainable development 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). In other words, the aim of sustainability is not merely the preservation of resources but, above all, a change in human attitudes and behaviours, encouraging reflection on one’s role in the environment (Bianchi et al., 2022). Sustainable development is based on three pillars: economic, social, and environmental (Bezeljak et al., 2020). These pillars are closely interconnected and have to function in balance (Bianchi et al., 2022).

ESD has been promoted as an educational approach to address sustainability issues in teaching and learning and seen as a catalyst for achieving the Sustainable Development Goals (UNESCO, 2017). ESD provides opportunities for young people to be involved in addressing authentic socio-ecological challenges in their local and global communities (Scheie & Stromholt, 2019). It empowers them to change the way they think and work towards a sustainable future (Wahyudin & Malik, 2019). Above all, it encourages participatory and learner-centred pedagogies that empower students to change their behaviour and take informed action for sustainable development (Cebrián & Junyent, 2015).

ESD also promotes the development of key competencies such as critical thinking, systems thinking, empathy, collaboration and responsible decision-making, which help learners understand and respond to complex global challenges (Sposab & Rieckmann, 2024). Sustainability issues are interdisciplinary; the topics are often complex and do not neatly fit into a single subject. Therefore, teachers and schools need to work across school subjects to address these major societal issues (Walshe, 2017).

The Role of higher education institutions in promoting sustainability through the Eco-Schools programme

Higher education institutions play a crucial role in promoting sustainable development through education and research; shaping values, behaviours and competencies necessary for a sustainable future (Serafini et al., 2022). Christou et al. (2024) argue that these institutions can integrate sustainability as part of their overall strategy by embedding it into curricula, research programmes and community engagement. The whole institution approach emphasises that sustainability should be embedded across multiple aspects of university operations, rather than being confined to individual courses. Thus, curricula, research activities, infrastructure, resource management and governance, among others, should all be included (Christou et al., 2024; Lee, 2025). Indeed, different studies show that higher education institutions, particularly those offering teacher-training programmes, can foster sustainability competencies by integrating education for sustainable development into curricula and pedagogical practices (Fuertes-Camacho et al., 2019; Imara & Altinay, 2021). The development of transversal competencies, such as systems thinking and critical thinking, which are essential for understanding and addressing complex sustainability challenges, is also supported by higher education institutions (Lee, 2025).

In Slovenia, this responsibility is particularly evident at the Faculty of Education of the University of Ljubljana, which, as the central national institution for teacher education, prepares teachers for all levels of the school system and plays a crucial role in embedding sustainability principles and transversal competencies across future pedagogical practice (University of Ljubljana, n.d.). The Faculty of Education has systematically aligned its educational mission with sustainability-oriented curricula and institutional practices. A key milestone in this process was its integration into the international Eco-School programme in the academic year 2013/2014.

The Eco-Schools programme is an internationally recognised system of holistic environmental education designed to foster sustainability awareness among children and young people and to promote their active engagement in local communities (Eco-Schools, n.d.). It encompasses a wide range of educational institutions, from preschools to universities, and operates according to a seven-step methodology. Successful implementation is recognised with the international Green Flag award, the highest public recognition for environmental practice according to the criteria of the Foundation for Environmental Education. The goals of the Slovenian Eco-Schools programme are broadly consistent with the international Eco-Schools objectives and focus on fostering sustainability awareness, environmental responsibility and active participation in local communities. The programme seeks to cultivate a lifelong commitment to care for the environment and nature, to encourage creative and innovative problem-solving, and to support effective use of natural resources such as water, waste and energy. It also emphasises positive interpersonal relations, efforts towards poverty prevention and education for a healthy lifestyle, thereby extending traditional environmental aims to include important social and health-related dimensions. Furthermore, the programme promotes networking among schools at national and international levels, reinforcing global collaboration and shared learning (Eco-Schools, n.d.).

In 2014, the Faculty of Education of the University of Ljubljana became the first higher-education institution in Slovenia to receive the Green Flag, confirming its commitment to environmental responsibility and whole-institution sustainability. Through the Eco-School framework, the Faculty promotes ecological awareness, encourages environmentally responsible behaviour, and fosters sustainability-related competencies among prospective teachers (Kostanjevec, 2015). By integrating sustainability into curricula, research

activities and institutional operations, the Faculty of Education demonstrates how teacher education institutions can operationalise sustainability in a coherent and transformative manner. This approach prepares future educators to address complex sustainability challenges and promote sustainability across educational settings.

The Home Economics discipline and the goals of the Eco-Schools Programme: Synergies for sustainable education

Home Economics is a multidisciplinary educational discipline that integrates knowledge and skills connected to nutrition, health and well-being, resource management, textiles, family economics and consumer behaviour to address practical, real-life challenges faced by individuals, families and communities (Erjavšek, 2021). According to the IFHE (n.d.), the discipline aims to enhance quality of life, promote sustainable living and support the rational use of resources. By combining theoretical understanding with experiential learning, Home Economics equips learners with the competencies necessary to manage daily life effectively, make informed decisions, and contribute positively to society (Magee et al., 2010). The household and family are recognised as foundational units of society, shaping norms, values, and behaviours that extend into the broader community (Haapaniemi et al., 2022). Increasingly, Home Economics is recognised as a key vehicle for ESD. It engages learners in identifying with sustainability-related issues, such as responsible consumption, resource efficiency, healthy lifestyles and environmental stewardship, addressing both ecological and social dimensions (Bohm, 2023). Contemporary Home Economics education integrates multidisciplinary knowledge with practical life skills, directly supporting the objectives of the Eco-Schools programme by fostering sustainability awareness, responsible environmental behaviour and the development of competencies necessary for sustainable living (Erjavšek & Kostanjevec, 2026). The programme provides a framework that encourages schools to promote sustainability and engage learners in active environmental and social practices.

The synergy between Home Economics and the Eco-Schools programme is evident in their shared commitment to holistic, real-life learning for sustainability. Both frameworks prioritise the development of learners' competencies to act responsibly in environmental, economic and social spheres, whether through household resource management, healthy living practices or community engagement. By embedding principles of ESD within school curricula and whole-school activities, Home Economics provides practical pedagogical avenues to advance the goals of Eco-Schools. This

integration supports not only environmental awareness, but also broader sustainable behaviour, critical thinking and active citizenship, enabling learners to apply sustainability concepts in everyday life and contribute effectively at local and global levels (Erjavšek, et al., 2021; Øvrebø, 2015). Taken together, literature demonstrates that the alignment between Home Economics and the Eco-Schools programme contributes to learners' comprehensive sustainability competencies, bridging theory and practice, and fostering the knowledge, skills and attitudes required for responsible and informed participation in contemporary society (Bohm, 2023; Eco-Schools, n.d.; Syed & Akhter, 2018).

Pre-service education and competence of Home Economics teachers in Slovenia

In Slovenia, pre-service Home Economics teachers complete their professional training at the Faculty of Education, University of Ljubljana within structured and specialised teacher education programmes. Students following the Home Economics pathway develop general pedagogical competencies through foundational coursework in educational sciences. They also acquire subject-specific competencies through dedicated Home Economics modules aligned with the national curriculum. Graduates thus attain an integrated combination of pedagogical knowledge and Home Economics expertise, enabling them to deliver effective and contextually appropriate instruction in primary schools (University of Ljubljana, Faculty of Education, 2024–2025a). According to Slovenian legislation (Act Amending and Supplementing the Elementary School Act, 2025), the qualifications required to teach Home Economics in the fifth and sixth grades of primary school are clearly defined. In the fifth grade, the subject may be taught by teachers with a university or master's degree in primary school education or a degree in Home Economics with a subject-specific specialisation. In the sixth grade, teaching is primarily assigned to teachers with a degree in Home Economics. Additionally, teachers of biology or chemistry may teach the subject in both grades, provided they meet the general requirements for primary school teaching and have completed relevant additional training in Home Economics. Research indicates that teachers' competence in Home Economics significantly affects the quality of instruction. Kostanjevec et al. (2018) found that teachers with formal Home Economics education report higher confidence and greater competence across specialist areas, including economics, textiles and clothing, living and environment, and food and nutrition. This underscores the importance of subject-specific competencies alongside general pedagogical skills to achieve curriculum goals

effectively. Similarly, Erjavšek et al. (2021) highlight that ongoing professional development is crucial for integrating contemporary topics, such as sustainable development, into Home Economics teaching. Banič and Koch (2015) note that official data on the formal education of teachers of Home Economics in Slovenia are limited. Based on information from Elementary school websites, 170 fifth-grade Home Economics teachers have been identified. According to Lah (2015), it is common practice for out-of-field teachers to also teach Home Economics in the sixth grade. Graduates of the primary school teacher programme who are permitted to teach Home Economics acquire general pedagogical competencies, but typically lack the subject-specific competencies necessary to deliver Home Economics education effectively (University of Ljubljana, Faculty of Education, 2024–2025b).

Developing competencies for life: Home Economics education in the Slovenian Elementary school context

In Slovenian Elementary school education, pupils are supposed to acquire knowledge about healthy lifestyles and sustainable forms of organising their social and economic life, to develop responsibility for their health, to strengthen abilities for functioning in society, to embrace life-long learning and continuous personal growth, and to develop capacities to preserve the natural environment (Kalin et al., 2011). The Slovenian nine-year compulsory school curriculum includes Home Economics as a subject, which is compulsory for 5th graders (aged 10) and 6th graders (aged 11). Within this subject, pupils acquire knowledge and skills pertaining to the natural and social sciences (Erjavšek, 2021).

In the 2011 curriculum, the subject comprised four distinctive teaching modules: Economics, Textile and Clothing, Living and the Environment, and Nutrition. In the fifth grade, the teaching lasted 35 hours, covering the Economics and Textile and Clothing modules; in the sixth grade, 52.5 hours were dedicated to Home Economics, covering the Living and the Environment, and Nutrition modules. The subject aimed to stimulate pupils to reflect on contemporary issues at the individual, family or societal level. Pupils acquired knowledge and skills for the prudent use of natural and social resources necessary to meet basic living needs (Zavod RS za šolstvo, 2011). Although the curriculum thus implicitly allowed for sustainable practices, the term “sustainable development” was not explicitly mentioned (Erjavšek et al., 2021).

As part of the comprehensive overhaul of the general-education curriculum in Slovenia, the curriculum for Home Economics was revised and a new version was approved in May 2025 (Ministrstvo za vzgojo in izobraževanje & Zavod RS za šolstvo, 2025). Erjavšek and Kostanjevec (2026) argue that, given the rapid societal, technological and environmental changes, the responsiveness and adaptability of the curriculum are becoming even more important. Consequently, it is essential that Home Economics curricula remain aligned with real-life competencies that support the quality of life of individuals, families and the broader society. This perspective reinforces the holistic approach of the revised curriculum (Ministrstvo za vzgojo in izobraževanje & Zavod RS za šolstvo, 2025). The curriculum integrates economic and financial topics, nutrition, textiles and safe and comfortable home environments. It also includes cross-cutting aspects, such as well-being and health, consumption and social skills. The revised curriculum explicitly highlights cross- the topic of sustainable lifestyle as a cross-cutting topic, enabling students to acquire the knowledge, skills and attitudes necessary to identify environmental challenges and develop a sustainable relationship with the environment. Home Economics lessons promote critical thinking in addressing environmental issues, and they foster awareness of the impact of personal behaviour on the environment. Overall, the revised curriculum emphasises the development of a sustainable and responsible lifestyle at the individual, family and societal levels. This approach is grounded in the uniform theoretical and philosophical premises of the Home Economics discipline (IFHE, n. d.).

It is against this backdrop that the current study set out to explore Home Economics student-teachers' environmental awareness and perception of the role of environmental education within a framework of sustainability and sustainable practices. As future educators, the strength of their competency and interest in the area would determine the quality of their pedagogies in the classroom.

Methodology

This study employed a descriptive quantitative research design in the field of educational research. Its purpose was to explore the attitudes towards sustainability and self-reported sustainable behaviours of pre-service teachers who will teach Home Economics in primary schools. The participants were pre-service teachers from the Faculty of Education, University of Ljubljana.

Research sample

A non-probability purposive sampling approach was used to recruit pre-service teachers expected to teach Home Economics in primary education. Participants were drawn from the undergraduate programmes for Home Economics and Primary Education at the Faculty of Education, University of Ljubljana. The inclusion of pre-service Primary Education students was intentional, as Home Economics in Grade 5 is predominantly taught by graduates of this programme. The sample therefore consisted of pre-service teachers enrolled in undergraduate programmes, typically within the age range of undergraduate students in Slovenia (approximately 20–23 years).

The final sample comprised 97 pre-service teachers who voluntarily participated in the study. Thus, elements of convenience sampling were also present within the defined target population due to voluntary participation. Pre-service teachers enrolled in the aforementioned programmes during the 2023/2024 academic year were invited to participate via institutional email distribution lists. As recruitment was conducted through institutional mailing lists, the exact response rate could not be determined.

Data collection instruments

Data were collected using an anonymous online questionnaire developed and administered via the 1KA platform (<https://www.1ka.si/d/en>), an open-source application for creating and managing online surveys. The questionnaire comprised Likert-scale items developed based on a review of relevant literature in the field of education for sustainable development and sustainability-related behaviours, as well as established frameworks such as the Eco-Schools programme (Alshuwaikhat & Abubakar, 2008; Eco-Schools, n.d). No pilot testing of the questionnaire was conducted prior to data collection. However, the authors reviewed the instrument for clarity, face validity and content validity prior to implementation.

Very little demographic information was collected. Information on the student's study programme was not requested, as programme affiliation was an inclusion criterion. Gender data were not collected, as the proportion of male students in both programmes was very low; therefore, this variable was not considered analytically relevant. However, the absence of gender information represents an additional limitation. Other demographic information, such as exact age and year of study, was not collected and should be considered a limitation of the study.

Attitudes towards sustainable behaviour were measured using a six-item self-report scale assessing respondents' agreement with statements related to environmental responsibility and pro-environmental orientation. The items reflected the perceived importance and personal relevance of sustainable practices. The following attitudes were examined: the importance of properly separating waste (A1), turning off lights in empty rooms (A2), saving paper towels in university restrooms (A3), saving drinking water (A4), using public transport to commute to the university (A5), and ensuring that there is as little food waste as possible (A6). Responses were recorded on a 5-point Likert scale ranging from 1 (not important at all) to 5 (very important). The scale was designed to capture a general attitudinal orientation towards sustainability.

Sustainable behaviour was assessed using a six-item self-report measure covering everyday pro-environmental actions, including waste separation (B1), energy conservation (B2), reduction of paper towel use (B3), water consumption (B4), use of public transport (B5), and minimisation of food waste (B6). Responses were measured on a 5-point Likert scale ranging from 1 (never) to 5 (always). The items were selected to represent a range of environmentally relevant behaviours commonly examined in studies of student sustainability practices.

The study was conducted in accordance with ethical standards for educational research. Participation was voluntary, informed consent was obtained, and confidentiality and anonymity were ensured. Participants were fully informed about the purpose, aims and data handling procedures of the study.

Data analysis

Data from 97 fully completed questionnaires were included in the statistical analyses; 10 incomplete questionnaires were excluded. The collected data were organised in Microsoft Excel and analysed using IBM SPSS Statistics 30. Descriptive statistics were used to summarise the data, and inferential statistics were applied to test for differences between groups. Statistical significance was set at $p \leq 0.05$.

Exploratory factor analysis (principal axis factoring) of the attitudinal items indicated a broadly unidimensional structure, with factor loadings ranging from $\lambda = 0.327$ (A5) to $\lambda = 0.810$ (A4). However, the loading for A5 was notably weak, indicating a limited contribution to the construct. The extracted factor accounted for 32.5% of the variance, and the scale showed borderline internal consistency (Cronbach's $\alpha = 0.693$). In contrast, the behavioural items

demonstrated a weak and poorly defined three-factor structure, with substantial cross-loadings and one factor defined by a single item (B5). Additionally, one item showed only a marginal loading ($\lambda = 0.345$). The three-factor solution accounted for 31.2% of the variance, and the scale showed low internal consistency (Cronbach's $\alpha = 0.347$). A one-factor solution explained only 17.2% of the variance, with two items showing critically low loadings (B5: $\lambda = -0.04$; B1: $\lambda = 0.19$), further indicating poor unidimensionality. Given the theoretical relevance of all items, they were retained and analysed individually in subsequent analyses rather than being excluded based on factor-analytic results. To enable meaningful comparison of mean scores across the two item sets, each item was examined separately. Composite dimensions derived from factor analysis were not used, as differing and unstable factor structures would have resulted in non-comparable constructs.

Results

Pre-service teachers' attitudes towards sustainable behaviour

The results presented in table 1 indicate that pre-service teachers generally assign relatively high importance to sustainable activities. The highest mean importance was given to minimising food waste ($M = 3.81$, $SD = 0.42$), followed by turning off lights in empty rooms ($M = 3.79$, $SD = 0.41$), proper waste separation ($M = 3.78$, $SD = 0.53$), and saving drinking water ($M = 3.77$, $SD = 0.47$). Lower importance was assigned to saving paper towels ($M = 3.43$, $SD = 0.63$); while the lowest rating was for using public transport ($M = 3.26$, $SD = 0.75$). Overall, response variability was low across items.

Table 1 *Pre-service Teachers' Attitudes toward Sustainable Behaviour (N=96)*

	Not important at all		Not important		Neither important nor unimporta nt		Important		Very important		M	SD
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%		
A1: Proper waste separation	1	1.0	2	2.1	14	14.4	80	82.5	0	0.0	3.78	0.525
A2: Turning off lights in empty rooms	0	0.0	0	0.0	20	20.6	77	79.4	0	0.0	3.79	0.407

A3: Saving paper towels in university restrooms	0	0.0	7	7.2	41	42.3	49	50.5	0	0.0	3.43	0.628
A4: Saving drinking water	0	0.0	2	2.1	18	18.6	77	79.4	0	0.0	3.77	0.468
A5: Using public transport to commute to the university	2	2.1	12	12.4	42	43.3	41	42.3	0	0.0	3.26	0.754
A6: Making sure there's as little food waste as possible	0	0.0	1	1.0	16	16.5	80	82.0	0	0.0	3.81	0.417

Note. 1 = Not important at all; 2 = Not important; 3 = Neither important nor unimportant; 4 = Important; 5 = Very important. *f* = frequency; % = percentage; *M* = mean; *SD* = standard deviation.

With respect to perceived importance of different forms of sustainable behaviour among pre-service teachers, the analysis of paired-samples *t*-tests (table 2) revealed statistically significant differences between several behaviours.

Table 2 Results of Paired-Samples *t*-Tests on the Perceived Importance of Different Forms of Sustainable Behaviour among Pre-Service Teachers (N=96)

Behaviour 1	Behaviour 2	<i>M</i>	<i>SD</i>	<i>SEM</i>	<i>t</i>	<i>p</i>
Waste separation (A1)	Saving paper towels (A3)	.351	.693	.070	4.983	<.001
Waste separation (A1)	Using public transport (A5)	.526	.792	.080	6.540	<.001
Turning off lights (A2)	Saving paper towels (A3)	.361	.632	.064	5.621	<.001
Turning off lights (A2)	Using public transport (A5)	.536	.830	.084	6.362	<.001
Saving paper towels (A3)	Saving drinking water (A4)	-.340	.627	.064	-5.342	<.001
Saving paper towels (A3)	Using public transport (A5)	.175	.817	.083	2.114	.019

Saving paper towels (A3)	Minimising food waste (A6)	-.381	.603	.061	-6.232	<.001
Saving drinking water (A4)	Using public transport (A5)	.515	.818	.083	6.207	<.001
Using public transport (A5)	Minimising food waste (A6)	-.557	.790	.080	-6.939	<.001

Note. *M* = mean; *SD* = standard deviation; *SEM* = standard error of the mean; *t* = t-statistic; *p* = significance value; *df* = 96 for all tests.

Waste separation and turning off lights in empty lecture rooms were among the highest rated behaviours, generally surpassing most other sustainability practices. Specifically, waste separation was perceived as significantly more important than saving paper towels and using public transport (both $p < .001$). Turning off lights in empty lecture rooms was also perceived as significantly more important than saving paper towels and using public transport (both $p < .001$). Saving paper towels was perceived as significantly less important than saving drinking water ($p < .001$), but significantly more important than using public transport ($p = .019$) and less important than minimising food waste ($p < .001$). Saving drinking water was perceived as significantly more important than using public transport ($p < .001$), while using public transport was rated as significantly less important than minimising food waste ($p < .001$). No significant differences were observed between waste separation, turning off lights, saving drinking water and minimising food waste; nor between turning off lights and saving drinking water, or minimising food waste. No significant difference was found between saving drinking water and minimising food waste.

Pre-service teachers' sustainable behaviour

The study also examined how often pre-service teachers engage in sustainable behaviours. A 5-point Likert scale was used to assess the frequency of specific sustainability actions, including waste separation, saving electricity and paper towels in restroom facilities, water conservation, use of public transport and minimising food waste (table 3).

Table 3 *Pre-service Teachers' Sustainable Behaviour (N=96)*

	Never		Very rarely		Sometime s		Often		Always		M	SD
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%		
B1: I separate waste.	0	0.0	1	1.0	1	1.0	30	30.9	64	66.0	4.64	0.771
B2: I make sure to turn off the lights in lecture rooms when no one is present.	4	4.1	5	5.2	17	17.5	25	25.8	45	46.4	4.06	1.113
B3: I pay attention to using fewer paper towels in the university restroom.	0	0.0	1	1.0	10	10.3	51	52.6	34	35.1	4.23	0.672
B4: I pay attention to reducing my drinking water consumption.	0	0.0	1	1.0	6	6.2	43	44.3	46	47.4	4.40	0.657
B5: I use public transport to commute to the university.	9	9.3	7	7.2	13	13.4	27	27.8	40	41.2	3.85	1.298
B6: I pay attention to minimising food waste.	0	0.0	2	2.1	2	2.1	44	45.4	48	49.5	4.44	0.646

Note. 1 = Never; 2 = Very rarely; 3 = Sometimes; 4 = Often; 5 = Always. *f* = frequency; % = percentage; *M* = mean; *SD* = standard deviation.

The results presented in table 3 indicate relatively high frequencies of sustainable behaviours. Waste separation was the most frequently reported behaviour ($M = 4.64$, $SD = 0.77$), followed by minimising food waste ($M = 4.44$, $SD = 0.65$) and saving drinking water ($M = 4.40$, $SD = 0.66$). Saving paper towels was also reported at a high frequency ($M = 4.23$, $SD = 0.67$). Turning off lights showed a slightly lower frequency ($M = 4.06$, $SD = 1.11$), while using public transport was the least frequently reported behaviour ($M = 3.85$, $SD = 1.30$).

As shown in table 4, significant differences were observed between several forms of sustainable behaviour. Waste separation was performed significantly more frequently than all other behaviours ($p \leq .011$ in all cases). Saving drinking

water and minimising food waste were reported significantly more frequently than turning off lights ($p = .004$ and $p = .002$, respectively). In contrast, saving paper towels was less frequently reported than saving drinking water ($p = .014$), although it was more frequently reported than using public transport ($p = .007$), while it was less frequent than minimising food waste ($p = .007$). Saving drinking water was also reported significantly more frequently than using public transport ($p < .001$), and using public transport was least frequently reported compared with minimising food waste ($p < .001$). Non-significant differences were observed between turning off lights and saving paper towels or using public transport, as well as between saving drinking water and minimising food waste.

Table 4 Results of Paired-Samples *t*-Tests Comparing Different Forms of Sustainable Behaviour Among Pre-Service Teachers ($N=96$)

Behaviour 1	Behaviour 2	<i>M</i>	<i>SD</i>	<i>SEM</i>	<i>t</i>	<i>p</i>
Waste separation (B1)	Turning off lights (B2)	.573	1.131	.115	4.964	<.001
Waste separation (B1)	Saving paper towels (B3)	.406	.853	.087	4.665	<.001
Waste separation (B1)	Saving drinking water (B4)	.240	.830	.085	2.827	.003
Waste separation (B1)	Using public transport (B5)	.781	1.452	.148	5.270	<.001
Waste separation (B1)	Minimising food waste (B6)	.198	.829	.085	2.340	.011
Turning off lights (B2)	Saving drinking water (B4)	-.333	1.202	.123	-2.716	.004
Turning off lights (B2)	Minimising food waste (B6)	-.375	1.233	.126	-2.979	.002
Saving paper towels (B3)	Saving drinking water (B4)	-.167	.735	.075	-2.222	.014
Saving paper towels (B3)	Using public transport (B5)	.375	1.467	.150	2.504	.007
Saving paper towels (B3)	Minimising food waste (B6)	-.208	.820	.084	-2.490	.007
Saving drinking water (B4)	Using public transport (B5)	.542	1.486	.152	3.571	<.001
Using public transport (B5)	Minimising food waste (B6)	-.583	1.506	.154	-3.796	<.001

Note. *M* = mean; *SD* = standard deviation; *SEM* = standard error of the mean; *t* = *t*-statistic; *p* = significance value; *df* = 95 for all tests.

Pre-service teachers' perceptions of the impact of environmental education on attitudes and behaviour

Pre-service teachers were asked to indicate the extent to which they agree that environmental education influences their attitudes towards sustainable behaviour and their own sustainable behaviour. Participants reported a generally positive perception of the influence of environmental education on both attitudes ($M = 3.90$, $SD = 0.86$) and behaviour ($M = 3.88$, $SD = 0.85$) (table 5).

Table 5 *Agreement of Pre-Service Teachers Regarding the Impact of Environmental Education on Their Attitudes and Sustainable Behaviour (N=96)*

	Strongly disagree		Disagree		Neither disagree nor agree		Agree		Strongly agree		M	SD
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%		
Environmental education influences my attitudes toward sustainable development.	2	2.1	6	6.2	11	11.3	59	60.8	19	19.6	3.90	0.860
environmental education influences my sustainable behaviour.	2	2.1	4	4.1	16	16.5	57	58.8	18	18.6	3.88	0.850

Note. 1 = Strongly disagree; 2 = Disagree; 3 = Neither disagree nor agree; 4 = Agree; 5 = Strongly agree. *f* = frequency; % = percentage; *M* = mean; *SD* = standard deviation.

To examine differences between the perceived impact of environmental education on sustainable behaviour and its impact on attitudes towards sustainable development, a paired-samples *t*-test was conducted. The results showed no statistically significant difference between the two variables. The mean difference was very small ($M = -0.02$, $SD = 0.60$), with a 95% confidence interval ranging from -0.140 to 0.099 . The *t*-test did not indicate a statistically significant effect, $t(96) = -0.341$, $p = .734$ (two-tailed). These results indicate that

pre-service teachers perceive environmental education as similarly influential on both their attitudes and their sustainable behaviour.

Pre-service teachers' perceptions of environmental awareness among pre-service teachers and staff

The perceived level of environmental awareness differed between pre-service teachers and university staff (table 6). Among pre-service teachers, the largest proportion of respondents (45.4%) selected the neutral category, while 33.0% rated environmental awareness as high or very high. The mean score was $M = 3.09$ ($SD = 0.89$), indicating moderate perceived awareness with some variability. Among university staff, more than half of respondents rated environmental awareness as high or very high, with a mean score of $M = 3.51$ ($SD = 0.66$), indicating higher perceived awareness and lower variability compared with pre-service teachers.

Table 6 Pre-Service Teachers' Perceptions of the Level of Environmental Awareness among Pre-Service Teachers and Staff (N=96)

	Very low		Low		Neither low nor high		High		Very high		M	SD
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%		
In your opinion. What is the level of environmental awareness among students at the university?	5	5.2	16	16.5	44	45.4	29	29.9	3	3.1	3.09	0.891
In your opinion. What is the level of environmental awareness among the staff at the university?	1	1.0	2	2.1	45	46.4	45	46.4	4	4.1	3.51	0.663

Note. 1 = Very low; 2 = Low; 3 = Neither low nor high; 4 = High; 5 = Very high. *f* = frequency; % = percentage; *M* = mean; *SD* = standard deviation.

A paired-samples *t*-test showed a statistically significant difference between the two groups ($t(96) = -5.341$, $p < .001$). The mean difference was $M = -0.41$, with a 95% confidence interval from -0.566 to -0.259 , indicating higher perceived environmental awareness among staff compared to pre-service teachers.

Discussion

The results of this study provide valuable insight into the attitudes and self-reported sustainable behaviours of pre-service teachers who will teach Home Economics in Slovenian primary schools. Overall, the findings indicate relatively high environmental awareness and frequent engagement in everyday sustainable practices. These practices are mainly simple, routine and supported by institutional infrastructure. This pattern is consistent with previous research showing that minimal-effort behaviours and habitual behaviours are more easily adopted and internalised than behaviours requiring substantial lifestyle changes (Barr, 2007; Linder et al., 2022; Steg & Vlek, 2009). Similarly, research on pro-environmental behaviour suggests that actions requiring fewer resources and facing fewer contextual barriers are more likely to be maintained over time (Stern, 2000).

Pre-service teachers rated waste separation, minimising food waste, conserving water and turning off lights in empty rooms as the most important behaviours. These behaviours are highly visible and strongly supported in institutional contexts. As a result, they are more likely to become part of everyday norms (Steg & Vlek, 2009). The lack of significant differences among these practices suggests that they are already well established in participants' behavioural patterns. Leal Filho et al. (2015) similarly report that routine, institutionally supported behaviours tend to be adopted more consistently than complex behaviours requiring additional decision-making or external conditions. In contrast, using public transport was rated as less important. This result is consistent with studies showing that transport behaviour is strongly shaped by structural and contextual factors. These include accessibility, travel time, service quality, cost and broader socio-economic conditions (Lättman & Otsuka, 2024). A systematic review by Ranjan and Sinha (2025) further confirms that transport system characteristics often outweigh environmental attitudes in determining mode choice. This discrepancy reflects the well-established attitude-behaviour gap in environmental psychology (Kollmuss & Agyeman, 2002; Stern, 2000).

Regarding practical competencies, pre-service teachers reported frequent engagement in behaviours related to food waste reduction, water conservation and responsible use of paper towels. These behaviours correspond closely with core areas of Home Economics, including food and nutrition, household resource management and sustainable consumption. Home Economics

education has been identified as an important context for translating sustainability principles into everyday practice (Erjavšek, 2021; Bohm & Oljans, 2025). The high level of engagement in reducing food waste is particularly noteworthy. It reflects the growing importance of food literacy in sustainability education. Improved food literacy has been linked to more responsible consumption patterns and reduced food waste (Lisciani et al., 2024; Vidgen & Gallegos, 2014). These findings emphasise the role of practical life skills in promoting sustainable consumption (Cebrián et al., 2020).

Pre-service teachers perceived environmental education as equally influential on both attitudes and behaviour. This finding supports the core principles of ESD, which emphasise the integration of cognitive, affective and behavioural dimensions (UNESCO, 2017). The absence of a significant difference between perceived influences suggests that environmental education at the Faculty of Education is not limited to awareness-raising, but also supports behavioural engagement. This aligns with ESD literature highlighting the importance of action-oriented learning and competence development (Tilbury, 2011). However, these results reflect perceived influence rather than measured causal effects. Therefore, no causal conclusions can be drawn.

Finally, perceived environmental awareness differed between pre-service teachers and university staff. Staff were consistently rated as more environmentally aware, and this difference was statistically significant. This finding aligns with research showing that academic staff play a key role in embedding sustainability within higher education institutions. They contribute through teaching, research and curriculum development that promote sustainability-oriented practices (Yassim et al., 2025). Leal Filho et al. (2015) similarly emphasise the role of academic staff as drivers of sustainability integration in universities.

Overall, the findings indicate that pre-service teachers demonstrate positive attitudes towards sustainability and frequently engage in routine, low-threshold sustainable practices. These are particularly linked to core Home Economics domains such as food and resource management. A clear distinction emerges between behaviours that are easy to implement and those dependent on broader structural conditions, such as transport infrastructure. Stern (2000) highlights the interaction between individual agency and contextual constraints in shaping sustainable behaviour. Environmental education was perceived as equally influential on attitudes and behaviour,

supporting its relevance within ESD in higher education. Teacher education institutions, particularly those engaged in frameworks such as the Eco-Schools programme, play an important role in developing sustainability-related competencies among future teachers. From a Home Economics perspective, the discipline offers strong potential to operationalise sustainability through everyday life skills and experiential learning. Pre-service teachers who personally value and practise sustainable behaviours are therefore better positioned to integrate sustainability into their future teaching practice. It should also be noted that some interpretations related to structural barriers, such as infrastructure limitations, are based on informed reasoning rather than directly measured variables. Strengthening sustainability integration in Home Economics teacher education remains essential for preparing future educators for responsible and informed sustainability-oriented teaching.

Conclusions

The study contributes to the growing body of research on sustainability as a topic and skill in teacher education, by providing empirical evidence on the attitudes and self-reported sustainable behaviours of pre-service teachers who will teach Home Economics in Slovenian primary schools. The findings indicate that pre-service teachers generally hold positive attitudes towards sustainable development and frequently engage in routine, low-threshold sustainable practices, particularly those closely related to core Home Economics content areas such as food and household resource management. A clear distinction emerged between sustainable behaviours that are easy to implement and institutionally supported, and those that depend on broader structural conditions, such as transport infrastructure. This highlights the importance of considering contextual and systemic factors in sustainability education which aligns with the holistic perspective of Home Economics whereby individual behaviour is situated within broader social, economic and environmental systems. Environmental education was perceived as equally influential on both attitudes and behaviour, indicating its relevance within ESD in higher education. However, these findings reflect perceived influence rather than measured causal effects.

The study also highlights the role of teacher education institutions, including those engaged in frameworks such as the Eco-Schools programme, in supporting the development of sustainability-related competencies through curricula, institutional practices, and professional role modelling. As a discipline, Home Economics offers meaningful opportunities to address

sustainability through practical life skills and experiential learning. Overall, the findings indicate that pre-service teachers who personally value and practise sustainable behaviours are more likely to integrate sustainability into their future teaching practice. Strengthening the integration of sustainability within Home Economics teacher education therefore remains an important priority for preparing educators to support responsible and informed engagement with sustainability in primary education.

Limitations and future research

A key limitation of this study is the use of a non-probability sample drawn from a single Faculty of Education in Slovenia, which restricts the generalisability of the findings beyond the institutional and national context. Additionally, all data were collected through self-report Likert-scale questionnaires, making the results susceptible to social desirability and common method bias. The cross-sectional design also prevents causal inferences about the relationships among environmental education, attitudes and sustainable behaviour. Another limitation concerns the analytical strategy. A relatively large number of paired-samples t-tests were conducted across multiple Likert-scale variables, increasing the risk of Type I error due to multiple comparisons. No formal correction for multiple testing (e.g. Bonferroni adjustment) was applied, and effect sizes were not reported alongside statistical significance tests. Consequently, some statistically significant findings should be interpreted with caution, as they may overestimate the strength of the observed effects.

Future research should address the mentioned limitations by using more diverse and representative samples, incorporating observational or behavioural measures, employing longitudinal or experimental designs, and applying appropriate corrections for multiple comparisons alongside reporting effect sizes to ensure a more robust interpretation of both statistical and practical significance.

The present study provides a useful basis for more robust research and innovation in teacher training. It provides insights which could help inform study methodologies, data collection tools, as well as curricular development, with the ultimate goal of strengthening sustainability-oriented Home Economics education.

References

- Act Amending and Supplementing the Elementary School Act. (2025). *Zakon o spremembah in dopolnitvah Zakona o osnovni šoli (ZOsn-L)*. Uradni list Republike Slovenije. <https://pisrs.si/pregledPredpisa?id=ZAKO448>
- Alshuwaikhat, H. M., & Abubakar, I. (2008). An integrated approach to achieving campus sustainability: assessment of the current campus environmental management practices. *Journal of cleaner production*, 16(16), 1777-1785. <https://doi.org/10.1016/j.jclepro.2007.12.002>
- Barr, S. (2007). Factors influencing environmental attitudes and behaviours: A UK case study of household waste management. *Environment and Behavior*, 39(4), 435-473. <https://doi.org/10.1177/0013916505283421>
- Bezeljak, P., Scheuch, M., & Torkar, G. (2020). Understanding of sustainability and education for sustainable development among pre-service biology teachers. *Sustainability*, 12(17), 6892. <https://doi.org/10.3390/su12176892>
- Bianchi, G., Pisiotis, U., & Cabrera Giraldez, M. (2022). *GreenComp: The European sustainability competence framework*. European Commission, Joint Research Centre. Publications Office of the European Union, Luxembourg. <https://data.europa.eu/doi/10.2760/13286>
- Bohm, I. (2023). Cultural sustainability: A hidden curriculum in Swedish Home Economics? *Food, Culture and Society*, 26(3), 742-758. <https://doi.org/10.1080/15528014.2022.2062957>
- Bohm, I., & Oljans, E. (2025). Teacher reflections on challenges and strategies teaching health, lifestyle, and sustainable development. *International Journal of Home Economics*, 18(1), 2-16. https://www.ifhe.org/fileadmin/user_upload/e_Journal/Vol_18_1/IJHE-Vol-18-Iss-1-2025.pdf
- Cebrián, G., & Junyent, M. (2015). Competencies in education for sustainable development: Exploring the student teachers' views. *Sustainability*, 7(3), 2768-2786. <https://doi.org/10.3390/su7032768>
- Cebrián, G., Junyent, M., & Mulà, I. (2020). Competencies in education for sustainable development: Emerging teaching and research developments. *Sustainability*, 12(2), 579. <https://doi.org/10.3390/su12020579>
- Christou, O., Manou, D. B., Armenia, S., Franco, E., Blouchoutzi, A., & Papathanasiou, J. (2024). Fostering a whole-institution approach to sustainability through systems thinking: An analysis of the state-of-the-art in sustainability integration in higher education institutions. *Sustainability*, 16(6), 2508. <https://doi.org/10.3390/su16062508>
- Corres, A., Ruiz-Mallén, I., & Rieckmann, M. (2024). Educators' competences, motivations and teaching challenges faced in education for sustainable development: What are the interlinkages? *Cogent Education*, 11(1), 2302408. <https://doi.org/10.1080/2331186X.2024.2302408>
- Eco-Schools. (n.d.). *Eco-Schools*. <https://ekosola.si/>

- Erjavšek, M. (2021). Modern aspects of Home Economics education and Slovenia. *Center for Educational Policy Studies Journal*, 11(4), 33–62. <https://doi.org/10.26529/cepsj.1191>
- Erjavšek, M., & Kostanjevec, S. (2026). Defining key areas of Home Economics education based on stakeholders' perceived needs: Results of a Delphi study. *European Journal of Educational Research*, 15(1), 39–51. <https://doi.org/10.12973/eu-jer.15.1.39>
- Erjavšek, M., Kostanjevec, S., & Lovšin Kozina, F. (2014). Education for sustainable development at the Faculty of Education, University of Ljubljana – A case study of the home economics programme [Vzgoja in izobraževanje za trajnostni razvoj na Pedagoški fakulteti Ljubljana – primer študijskega programa Gospodinjstvo z vezavami]. *Vzgoja in izobraževanje*, 45(4), 31–36.
- Erjavšek, M., Lovšin Kozina, F., & Kostanjevec, S. (2021). In-service home economics teachers' attitudes to the integration of sustainable topics in the home economics subject. *Center for Educational Policy Studies Journal*, 11(1), 27–47. <https://doi.org/10.26529/cepsj.614>
- Fuertes-Camacho, M. T., Graell-Martín, M., Fuentes-Loss, M., & Balaguer-Fàbregas, M. C. (2019). Integrating sustainability into higher education curricula through the project method, a global learning strategy. *Sustainability*, 11(3), 767. <https://doi.org/10.3390/su11030767>
- Haapaniemi, J., Palojoiki, P., & Taar, J. (2022). Future directions of home economics education: Nordic-Baltic perspectives. *Journal of Home Economics Education Research*, 34(4), 71–86. <https://doi.org/10.19031/jkheea.2022.12.34.4s.71>
- Hák, T., Janoušková, S., & Moldan, B. (2016). Sustainable development goals: A need for relevant indicators. *Ecological Indicators*, 60, 565–573. <https://doi.org/10.1016/j.ecolind.2015.08.003>
- Imara, K., & Altinay, F. (2021). Integrating education for sustainable development competencies in teacher education. *Sustainability*, 13(22), 12555. <https://doi.org/10.3390/su132212555>
- International Federation for Home Economics. (n.d.). *Home Economics in the 21st century*. <https://tinyurl.com/yvn8ndmx>
- Kalin, J., Krek, J., Medveš, Z., Valenčič Zuljan, M., & Vogrinc, J. (2011). Elementary school [Osnovna šola]. In J. Krek & M. Metljak (Eds.), *Bela knjiga o vzgoji in izobraževanju v Republiki Sloveniji* (pp. 107–179). Zavod RS za šolstvo.
- Khazen, M., Asli, S., Basheer, A., & Hugerat, M. (2025). The impact of a sustainability education initiative on pre-service teachers: Changes in environmental attitudes, willingness to act, and ecological footprint. *Sustainability*, 17(12), 5621. <https://doi.org/10.3390/su17125621>
- Kollmuss, A., & Agyeman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research*, 8(3), 239–260. <https://doi.org/10.1080/13504620220145401>
- Kostanjevec, S. (2015). Eko transformacija izobraževalnih organizacij – primer Pedagoške fakultete Univerze v Ljubljani [Eco transformation of educational

- organisations – a case of the Faculty of Education at the University of Ljubljana]. In S. Avsec (Ed.), *STRENGTH* (pp. 154–166). INITUT, Institute of Information Technology.
- Lamanauskas, V., & Malinauskienė, D. (2024). Education for sustainable development in primary school: Understanding, importance, and implementation. *European Journal of Science and Mathematics Education*, 12(3), 356–373. <https://doi.org/10.30935/scimath/14685>
- Lättman, K., & Otsuka, N. (2024). Sustainable development of urban mobility through active travel and public transport. *Sustainability*, 16(2), 534. <https://doi.org/10.3390/su16020534>
- Leal Filho, W., Manolas, E., & Pace, P. (2015). The future we want: Key issues on sustainable development in higher education after Rio and the UN decade of education for sustainable development. *International Journal of Sustainability in Higher Education*, 16(1), 112–129. <https://doi.org/10.1108/IJSHE-03-2014-0036>
- Lee, G. K. S. (2025). Embedding sustainability in higher education: A review of institutional strategy, curriculum reform, and digital integration. *International Journal of Science and Research Archive*, 15(2), 420–426. <https://doi.org/10.30574/ijrsra.2025.15.2.1396>
- Linder, N., Giusti, M., Samuelsson, K., & Barthel, S. (2022). Pro-environmental habits: An underexplored research agenda in sustainability science. *Ambio*, 51(3), 546–556. <https://doi.org/10.1007/s13280-021-01619-6>
- Lisciani, S., Camilli, E., & Marconi, S. (2024). Enhancing food and nutrition literacy: A key strategy for reducing food waste and improving diet quality. *Sustainability*, 16(5), 1726. <https://doi.org/10.3390/su16051726>
- Magee, M., Yoo, T. M., Mok, C.-F. J., & Washi, S. (2010). Collective empowerment of the Home Economics profession – Equipping the profession with advocacy, futures creation and leadership. *International Journal of Home Economics*, 3(1), 38–52.
- Ministrstvo za vzgojo in izobraževanje & Zavod RS za šolstvo. (2025). *Program osnovna šola: Gospodinjstvo: učni načrt* [Elementary school programme: Home Economics: curriculum]. https://www.gov.si/assets/ministrstva/MVI/Dokumenti/Osnovna-sola/Ucni-nacrti/Ucni-nacrti/2025/UN_OS/Ucni_nacrt_gospodinjstvo_2025.pdf
- Øvrebø, E. M. (2015). How Home Economics teachers in Norwegian lower secondary schools implement sustainability in their teaching. *International Journal of Learning, Teaching and Educational Research*, 10(2), 72–83.
- Owens, K. A., & Legere, S. (2015). What do we say when we talk about sustainability? Analyzing faculty, staff and student definitions of sustainability at one American university. *International Journal of Sustainability in Higher Education*, 16(3), 367–384. <https://doi.org/10.1108/IJSHE-06-2013-0055>

- Ranjan, R., & Sinha, S. (2025). A systematic review of mode choice behavior in urban transportation with emphasis on individual preferences and influencing factor. *Discover Cities*, 2(1), 98. <https://doi.org/10.1007/s44327-025-00138-3>
- Ruggerio, C. A. (2021). Sustainability and sustainable development: A review of principles and definitions. *Science of the Total Environment*, 786, 147481. <https://doi.org/10.1016/j.scitotenv.2021.147481>
- Scheie, E., & Stromholt, S. (2019). The sustainable backpack: Education for sustainable development through a nationwide professional development programme. *Acta Didactica Norge*, 13(2). <https://doi.org/10.5617/adno.6473>
- Serafini, P. G., de Moura, J. M., de Almeida, M. R., & de Rezende, J. F. D. (2022). Sustainable development goals in higher education institutions: A systematic literature review. *Journal of Cleaner Production*, 370, 133473. <https://doi.org/10.1016/j.jclepro.2022.133473>
- Sposab, K., & Rieckmann, M. (2024). Development of sustainability competencies in secondary school education: A scoping literature review. *Sustainability*, 16(23), 10228. <https://doi.org/10.3390/su162310228>
- Steg, L., & Vlek, C. (2009). Encouraging pro-environmental behaviour: An integrative review. *Journal of Environmental Psychology*, 29(3), 309–317. <https://doi.org/10.1016/j.jenvp.2008.10.004>
- Stern, P. C. (2000). Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues*, 56(3), 407–424. <https://doi.org/10.1111/0022-4537.00175>
- Syed, S. Z., & Akhter, M. (2018). Assessing Home Economics college students' behaviour towards sustainable development. *Bulletin of Education and Research*, 40(2), 105–111.
- Tilbury, D. (2011). *Education for sustainable development: An expert review of processes and learning*. UNESCO.
- UNESCO. (2017). *Education for sustainable development goals: Learning objectives*. <https://unesdoc.unesco.org/ark:/48223/pf0000247444>
- University of Ljubljana. (n.d.). *Faculty of Education*. <https://www.uni-lj.si/en/university/member-faculties-and-academies-ul/pedagoska-fakulteta/>
- University of Ljubljana, Faculty of Education. (2024–2025a). *Information booklet: First-level university study programme, two-subject study programmes*. https://www.pef.uni-lj.si/wp-content/uploads/2025/02/1000813_Dvopredmetni_ucitelj-24-25.pdf
- University of Ljubljana, Faculty of Education. (2024–2025b). *Information booklet: First-level university study programme, primary education*. https://www.pef.uni-lj.si/wp-content/uploads/2025/02/1000816_Razredni_pouk-24-25.pdf
- Vidgen, H., & Gallegos, D. (2014). Defining food literacy and its components. *Appetite*, 76, 50–59. <https://doi.org/10.1016/j.appet.2014.01.010>

- Wahyudin, D., & Malik, R. S. (2019). Teaching environmental education for sustainable development: Strategies and challenges. *Journal of Sustainable Development Education and Research*, 3(1).
- Walshe, N. (2017). An interdisciplinary approach to environmental and sustainability education: Developing geography students' understandings of sustainable development using poetry. *Environmental Education Research*, 23(8), 1130–1149. <https://doi.org/10.1080/13504622.2016.1221887>
- World Commission on Environment and Development. (1987). *Our common future*. Oxford University Press.
- Yassim, K., Adamu, C. D., & Uleanya, C. (2025). University stakeholders' roles in sustainability integration: Challenges and administrative implications for sustainable development. *Frontiers in Sustainability*, 6, 1605743. <https://doi.org/10.3389/frsus.2025.1605743>
- Zavod RS za šolstvo. (2011). *Program osnovna šola: Gospodinjstvo: učni načrt [Elementary school programme: Home Economics: curriculum]*. National Education Institute Slovenia. <https://www.zrss.si/podrocja/osnovna-sola/obvezni-program/>