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Published in:
Language Teaching Research

DOI:
10.1177/13621688231170682

Published: 13/05/2023

Document Version
Final published version

Document License
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Link to publication

Please cite the original version:
Maijala, M., Heikkola, L. M., Kuusalu, S.-R., Laine, P., Mutta, M., & Mäntylä, K. (2023). Pre-service language teachers' perceptions of sustainability and its implementation in language teaching. *Language Teaching Research*, 1–30. https://doi.org/10.1177/13621688231170682

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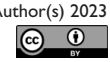
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LANGUAGE TEACHING RESEARCH

Language Teaching Research
1–30
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DOI: 10.1177/13621688231170682
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Pre-service language teachers' perceptions of sustainability and its implementation in language teaching

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Abstract

In both the school environment and teacher education, sustainable development is usually linked to the natural and social sciences and is rarely incorporated into language education or encouraged as part of language teacher education. As more research is needed on the practical implementation of sustainable development in language teaching and language teacher education,

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this study elucidates Finnish pre-service language teachers' perceptions of sustainability dimensions (i.e. ecological, economic, social, and cultural) and their role in language teaching. We used a questionnaire comprising open-ended and Likert-scale questions to examine pre-service language teachers' perceptions of and attitudes towards themes under all sustainability dimensions, and their feeling about their ability to integrate them into their teaching. Pre-service teachers ($n = 26$) recognized the importance of the social and cultural dimensions in language teaching and felt more capable of addressing personal environmental actions than global problems in the language classroom. Some pre-service teachers produced concrete practices linking sustainability issues with language teaching, but they were mostly teacher-centred. The pre-service teachers did not link equality as tightly to the cultural and social aspects of language teaching as they did in their personal lives. These findings help in developing language teaching and teacher education programmes toward the educational sustainable development goals. Moreover, the questionnaire can be used to analyse the consideration of sustainability themes in language teaching and language teacher education.

Keywords
education for sustainable development, language teaching, language teacher education, pre-service language teachers, sustainability

I Introduction

Sustainability, which entails actions towards a balance between human impact and the Earth's environmental carrying capacity, plays an important role in changing the present and shaping the future. Ecological sustainability lays the foundation for human well-being in all the other sustainability dimensions (social, cultural, and economic), which together form the basis for sustainable development as described in the United Nations Agenda 2030 (United Nations, 2015). Global topics in sustainability, including technological issues, have become a major challenge for teaching and teacher education (e.g. Evans et al., 2017). The need for sustainability education is widely recognized in many school subjects as a cross-curricular topic (Howard-Jones et al., 2021; Sund et al., 2020), except in the field of language education. However, language teaching has substantial potential for education for sustainable development because integrating sustainability education into language learning can provide language learners with a wide range of transferable skills (de la Fuente, 2022). Modern views of language emphasize its dependence on reciprocal interaction and underline the communicative nature of language in its teaching and learning (Dufva et al., 2014; van Lier, 2008). Hence, several integrative and learner-oriented methods actively used in teaching languages are readily available for the effective integration of sustainability education, especially for fostering important sustainability competencies.

Nowadays, becoming a language teacher requires a multitude of skills, including knowing how to prepare learners to face global issues, such as climate change and subsequent immigration. Therefore, it is important for future teachers to learn how to work in a multicultural and multilingual society while respecting the values of democracy and tolerance (e.g. Norberg, 2000; Scarino, 2022). UNESCO (Didham, 2018) named eight crucial sustainability competencies that learners should acquire through education: anticipatory, normative, strategic and collaboration competence, self-awareness, integrated problem-solving, systems thinking, and critical thinking. In their research on transformative action

in sustainability education, Frisk and Larson (2011) formulated four key competencies to focus on: (1) systems thinking and an understanding of interconnectedness, (2) long-term, foresighted reasoning and strategizing, (3) stakeholder engagement and group collaboration, and (4) action-orientation and change-agent skills. Language education has the tools to support the development of these types of sustainability competencies, but there is a need for more research to raise awareness of the possibilities for sustainability education and its development in language teaching.

In recent decades, a discussion has emerged on the growing importance of the role of language in education (e.g. Lwin & Silver, 2014). However, the role of language teaching in creating a democratic and equal society (see, for example, Wagner et al., 2018) is often overlooked. Accordingly, in language teacher education programmes, more attention could be paid to the roles of language teachers, which are no longer restricted solely to language content but focus more on 'educating responsive meaning makers in the world' (Kubanyiova, 2020, p. 50). As teachers are viewed as being 'agents of change' (Bürgener & Barth, 2018; Weinberg et al., 2020), teacher education can offer solutions to such challenges. The teachers' role in promoting the understanding of sustainability issues is of utmost importance because their choices in the classroom influence the student's experience (Öhman & Sund, 2021). While the role of teacher educators is to invite students to face and question their perceptions, beliefs, and values, this can be demanding for teacher educators, who may have difficulty linking the teaching of values with education. Training future teachers as agents of change who prefer to support agency for children as one of the key skills of the future (Council of Europe [CoE], 2018; OECD, 2022) can also be challenging.

As sustainable development in education has been highlighted by the United Nations in recent decades (United Nations, 2015), the number of studies concerning sustainability in teaching and teacher education has grown rapidly (see Evans et al., 2017). For instance, studies dealing with the role of sustainability issues in teacher education in Australia (Evans et al., 2017; Tomas et al., 2017) are numerous due to the magnitude of the local climate crisis (e.g. deforestation, loss of biodiversity, and increased fires). This area of study has also been receiving increasing attention in the European context (e.g. Gericke et al., 2020). Internationally, previous studies on the implementation of sustainability have so far mostly been conducted among mainstream pre-service (Evans et al., 2012; Tomas et al., 2017) and in-service subject teachers (Uitto & Saloranta, 2017; Sund & Gericke, 2020; Howard-Jones et al., 2021; for a review, see Evans et al., 2017). However, few studies have examined pre-service and in-service language teachers' knowledge and the implementation of sustainability in language teaching. Therefore, this study aims to fill that gap in the literature by elucidating Finnish pre-service language teachers' perceptions of sustainability dimensions (i.e. ecological, economic, social, and cultural) and their role in language teaching. Moreover, we aim to identify how the pre-service teachers evaluate both the importance of sustainability in their personal lives and their abilities to integrate sustainability issues into their future profession as language teachers. The participants in this study ($N=32$, of which a sample of $n=26$ could be analysed in this study) were students majoring in eight languages in total, who will be qualified to teach their respective language at all educational levels after completing their master's degree and completing a one-year (60 credits) teacher education programme. In the following section, we focus on the role of sustainability education within education in general and discuss the implementation of

sustainable language teaching in language teacher education. In Section III we introduce our research questions, and in Section IV we discuss the methodology, data collection tools, and our data analysis. In Section V we present our data analysis and findings, and discuss their meaning and implications for language education.

II Literature review

1 Previous research on the implementation of sustainability education

The importance of sustainability competencies (Didham, 2018) lies in the assumption that they will enable learners to make decisions and take actions towards a more sustainable future. While some studies have examined these sustainability competencies and how they can be fostered (e.g. Frisk & Larson, 2011) or measured their efficacy (e.g. Boeve-de Pauw et al., 2015), many others have focused more on the sustainable content of teaching materials (Mohammadnia & Moghadam, 2019). Because of the critical research debate concerning whether development can be called sustainable (e.g. Sumner, 2008), Sund et al. (2020) used the concept of environmental and sustainability education, which merges environmental education and education for sustainable development; by doing so, they take into consideration both sides of the debate without siding with one or the other.

At present, environmental citizenship, including sustainability issues, has been widely thematized in many countries in the national school curricula (e.g. Gericke et al., 2020), in higher education (e.g. Shephard, 2008; Shephard & Dulgar, 2015; Sterling, 2021; Weiss et al., 2021), and in teacher education (e.g. Evans et al., 2017). However, despite wide recognition of the need for sustainability education, its practical implementation still encounters various problems, such as a lack of expertise among teachers (see Monroe et al., 2013), and the distribution of time in the curriculum to discuss these issues. For instance, Howard-Jones et al. (2021) noted that, in general, there seems to be a lack of emphasis on engaging activities in curricula, even though topics relating to climate change, for example, have been found to be beneficial when teaching because they offer opportunities to link learning to personal experiences.

Teachers play a central role in the practical implementation of sustainability education. When teaching sustainability, subject teachers work within the teaching traditions of their subject (for a review, see Sund & Gericke, 2021), and educators in different fields have reported avoiding issues related to climate change (see, for example, Bowers et al., 2016) because of their concerns about parents' responses (Wise, 2010) or because they lack the required knowledge about climate change (Monroe et al., 2013). It is thought that climate change can create concerns among learners, which might eventually lead to avoidance of the topic in the classroom. However, visual presentations (cartoons, films, drawings, etc.), role-plays, simulations, discussions, and inquiry-based activities that engage the learner have been found to be beneficial in the teaching of sustainability (e.g. Karpudewan et al., 2015; Porter et al., 2012; for a review, see Monroe et al., 2019). Notably, subject teachers implement curricular content in different ways, even when dealing with the same topic (Gericke et al., 2018). According to recent studies among Finnish and Swedish subject teachers (Borg et al., 2012; Sund & Gericke, 2020; Uitto & Saloranta, 2017), language teachers thematize sustainable issues less in their teaching than other subject teachers. One reason for this is that they do not consider these topics

relevant in teaching their own subject. In contrast with other subject teachers, language teachers tend to foster sustainability education by stressing communication, conveying procedural knowledge, offering complementary media materials, and using teaching methods that enhance problem-solving skills (Borg et al., 2012; Sund & Gericke, 2020; Uitto & Saloranta, 2017).

In the Finnish context, a large-scale survey study by Uitto and Saloranta (2017) examined Finnish lower secondary school subject teachers ($N=442$) as educators of sustainability. Their findings showed that the most striking factor explaining the differences between teacher groups was that among subject teachers, language teachers incorporated sustainability issues the least and used a less holistic approach[1] in their teaching than other teacher groups. Language teachers dealt mostly with sociocultural dimensions (i.e. cultural heritage, cultural identity, and multiculturalism) in their teaching and seldom included ecological and economic issues. Because language teaching by default includes educating about different cultures and cultural differences related to the communities using the target language, it seems logical that cultural sustainability themes would be the easiest to incorporate into language teaching. In addition, as the core of language teaching is in communication and in the relationships between different language communities (see Cowley, 2011), it readily accommodates aspects of social sustainability, such as the linguistic equity of minority language groups (e.g. Phillipson, 2000). However, themes related to the economy and the environment might be the most difficult to include, which is reflected in the responses given in Uitto and Saloranta's (2017) study, where language teachers rated their knowledge of the cross-curricular theme 'Responsibility for the environment, wellbeing, and sustainable future' lower than, for instance, biology and geography teachers (Uitto & Saloranta, 2017; see also Borg et al., 2012).

A recent study by Howard-Jones et al. (2021) examined the views of primary and secondary teachers ($N=626$) concerning climate change education in England. Although climate change is mentioned directly only in the National Curriculum for Science and Geography, the results showed that other subject teacher groups also used a cross-curricular approach to sustainability teaching. Furthermore, teachers in all subjects preferred the cross-curricular approach. The consideration of climate change education is correlated with available resources. Although it was not clear how teachers in this study interpreted the term 'resources', the researchers assumed that these might have included teaching materials, time for planning and cross-curricular collaboration, and professional development. The survey also examined the teachers' views on which subject areas should be involved in climate change education. The findings showed that science and geography were the two subjects that teachers connected directly to climate change. The percentage of teachers favouring the inclusion of climate change education was 96% for science and 95.2% for geography, whereas only 23.2% of the teachers mentioned including climate change education in foreign language teaching, compared to 62.6% in English (i.e. their mother tongue).

In teacher training, sustainability education can easily be disregarded because it is not currently a compulsory component of teacher education programmes (Evans et al., 2017; Ferreira et al., 2007). Previous studies have indicated that the thematization of sustainability issues during teacher education programmes positively influences their implementation in teaching. For instance, in a study by Tomas et al. (2017), the attitudes of Australian pre-service teachers towards education for sustainability were examined using a Likert scale questionnaire ($N=100$) at the beginning and the end of the practicum

and through interviews with three pre-service teachers one semester after finishing the practicum. The results indicated that the thematization of sustainability issues during the practicum had a positive influence on perceived self-efficacy regarding sustainability issues. In addition, familiarity with and interest in these topics were higher than before the practicum (Tomas et al., 2017).

In summary, sustainability is acknowledged especially as a cross-curricular topic at the curricular level in many countries such as Sweden, Finland, the UK, and Australia. However, differences in disciplinary traditions influence how subject teachers implement sustainability education (Sund & Gericke, 2021). Disciplinary traditions should be acknowledged in teacher education because they can influence the content of teacher education programmes, and because neglecting them may hinder the consideration of sustainability issues during practicums.

2 The role of sustainability in language teacher education

Language teaching involves both linguistic knowledge and knowledge about the target culture as well as pedagogical skills in integrating these issues into classroom practice. The special feature of language teaching is that language is both the medium and the content of instruction (Halliday, 1980). In many countries, linguistic content (e.g. grammar, vocabulary) is traditionally emphasized in language teaching (for an overview of the history of language teaching methodology, see, for example, Celce-Murcia et al., 1997) and language teacher education (see, for example, Johnson, 2009). To the best of our knowledge, the implementation of sustainability education in language teaching and in language teacher education programmes has not been addressed to a great extent. In language teaching, sustainability has so far been mostly connected to linguistic equity and multilingualism, which teachers see as valuable, but they often lack the pedagogical skills to implement it (Alisaari et al., 2019; Heikkola et al., 2022; Obondo et al., 2016). Skills to support the learning of linguistically diverse students also take a long time to develop (Tarnanen & Palviainen, 2018). Sustainability can also be linked to equality in the availability and use of technological equipment (Blin et al., 2016).

As sustainability is mostly integrated as a cross-cutting theme in curricula (Sund et al., 2020), it can easily be omitted from the selection of topics in language teaching. However, linking sustainability themes in all subjects, including languages, enables students to form a more integrated perception of sustainability that connects with all areas of life. One possibility is to incorporate texts about sustainability issues into language teaching (Sund & Gericke, 2020). In the classroom, its ecology, participants, activities, structures (e.g. curriculum), and artefacts (e.g. textbooks) create the educational environment (Guerrettaz et al., 2018); even if the present teaching approach is learner-centred, teachers and artefacts are at the centre of classroom education. Teaching materials have a significant effect on which topics language teachers raise in their teaching (e.g. Guerrettaz & Johnston, 2013). The content of language textbooks, be they digital or not, is therefore of the utmost importance because language teachers mostly deal with the topics presented in textbooks (e.g. Tomlinson, 2012). Accordingly, we can assume that if sustainability issues are not thematized in language textbooks and other teaching materials, not to mention teacher education programmes, they are not discussed in classrooms either.

As mentioned, language teachers are less likely than other subject teachers to implement sustainability education into their teaching (Sund & Gericke, 2020; Uitto & Saloranta, 2017), which may be due to different teaching traditions (Sund et al., 2020). Language teacher education programmes play a key role in changing current teaching traditions. In teacher education, teaching can be influenced by the methods and tools used and how curricula are implemented in practice in schools. Therefore, there is an incentive to more closely study the abilities and needs of pre-service language teachers concerning sustainability education.

III Research questions

This study examines pre-service language teachers' perceptions of sustainability themes by asking the following research questions:

- Research question 1: How do pre-service language teachers evaluate different sustainability themes in relation to (a) their personal lives, (b) integrating them in language teaching and language teacher education, and (c) their ability to integrate them into their language classes?
- Research question 2: How do pre-service language teachers understand sustainability in language teaching and how are they able to verbalize ways of implementing sustainability in their teaching?

IV Methodology

1 Participants

We administered an online survey among Finnish university pre-service teachers attending a master's-level course dealing with language teaching issues ($N=32$). The respondents represented eight different language majors: English (26.9%), Finnish (23.1%), French (7.7%), German (11.5%), Italian (3.8%), Russian (3.8%), Scandinavian languages (11.5%), and Spanish (11.5%). All pre-service teachers in the course completed the survey, and all but one student agreed on the further use of their answers for research purposes. For the final analysis, we excluded those who were studying to become class teachers ($n=5$) so that our data would reflect the views of future language subject teachers. Of these participants, 20 answered to the open-ended questions. Hence, the quantitative and qualitative data consist of answers from 26 and 20 pre-service language teachers, respectively. The ages of the pre-service teachers ranged from 21 to 54 years ($M=26.42$, $SD=6{,}819$). The original questionnaire and answers were in Finnish, which was the course's language of instruction.

In the Finnish context, subject teachers' subject matter knowledge is acquired from the respective university departments. Usually, pre-service language teachers apply to a one-year teacher education programme at the Department of Teacher Education after receiving their bachelor's degree in their major subject from corresponding university departments. Pedagogical content knowledge is built during the teacher education programme year at both the Department of Teacher Education and the Teacher Training School associated with the Faculty of Education. In Finland, the role of teacher training

schools is noteworthy because pre-service teachers learn practical skills and underlying pedagogical backgrounds by working in real classrooms under the supervision of mentoring teachers (see Pollari et al., 2018). Together with a master's degree in any language, the teacher education programme qualifies students to teach at all educational levels. Many language students complete studies in additional minor languages and are able to teach them as well, but Finnish L1 teachers often have only one language to teach. In the Finnish context, all L1 teachers have the qualifications to teach Finnish as a second language (L2), and due to the growing number of children with migrant backgrounds, additional pre- and in-service training is offered to Finnish L1 teachers in Finnish L2 teaching.

Of the participants, 50% had completed their teacher education programme, which is needed to qualify as a teacher in Finland, and the rest advised that they were going to conclude it during their major studies. Therefore, we have reason to assume that all the pre-service teachers were considering a career as language teachers and could answer questions about their ability to integrate sustainability themes into language teaching. In addition, none of them had participated in prior sustainability studies, and only one student had taken some courses related to sustainability. Hence, we assumed the current knowledge of sustainability to be at a relatively similar level among the participants.

2 Data collection

This research is part of a larger four-year project whose aim is to investigate how the principles of ethics and sustainability can be promoted in language teaching and pre-service language teacher education. To study pre-service language teachers' perceptions of the role of sustainability in language teaching, data were collected in a pilot study of the project through an online questionnaire that included five-point Likert scale questions and two open-ended questions. In the questionnaire, four dimensions of sustainability –ecological, economic, social, and cultural – were used as a framework for sustainable development (Didham, 2018; Finnish National Board of Education, 2020; OKKA Foundation, 2021). We also used previous research of teachers' views on sustainability as a guideline and reference to acquire new, more detailed information on the views related to language teachers and teaching (especially Uitto & Saloranta, 2017; Sund et al., 2020), and as a basis for elaborating the questions and items when designing the questionnaire. The Likert-scale questions addressed various themes and their importance within all sustainability dimensions, considering the aspects of language teaching, teacher education, and the personal life of the pre-service teachers (for further details, see Appendix 1).

In the first part of the questionnaire, the pre-service teachers evaluated 35 themes pertaining to sustainability on the following scale: 1 = not at all important, 2 = not very important, 3 = somewhat important, 4 = important, and 5 = very important. The scale for the last question was as follows: 1 = poor, 2 = rather poor, 3 = satisfactory, 4 = good, and 5 = very good. Table 1 lists the sustainability themes. We analysed the responses to one open-ended question in which the participants were asked to share their thoughts about the importance and possibilities of considering different sustainable development themes in language teaching (see Appendix 1). The translated questionnaire can be viewed in detail in Appendix 1.

Table 1. Themes of sustainability for the five-point Likert scale evaluation in the questionnaire for pre-service teachers.

✓ safe neighbourhood	✓ equal education and possibilities for lifelong learning
✓ saving energy/water	
✓ adverse environmental effects due to use of natural resources	✓ adverse environmental effects of traffic
✓ peace and justice in society	✓ preserving biodiversity
✓ nearby nature and its wellbeing	✓ increasing vegetarian food in diet
✓ healthy diet	
✓ democratic society	✓ internationality
✓ actions to prevent climate change	✓ gender equality
✓ preventing and intervening in bullying	✓ sustainable industries and innovations
✓ adverse agricultural effects on the environment	✓ consumer habits based on personal lifestyle
✓ human rights and equality	✓ cultural environment and heritage
✓ sustainable economic growth	
✓ responsible travel	✓ cultural diversity in Finland
✓ tolerance	✓ linguistic diversity in Finland
✓ recycling	✓ personal financial situation
✓ ensuring healthy life and wellbeing for everyone	✓ personal social health and wellbeing
✓ responsible and sustainable consumer habits	✓ personal mental health and wellbeing
✓ securing renewable energy for everyone	✓ personal physical health and well-being
✓ societal involvement	✓ sorting waste
✓ adverse industrial effects on the environment	

3 Data analysis

First, a pre-analysis was conducted using a descriptive method to obtain an idea of the pre-service language teachers' views of the sustainability themes in relation to their personal lives and when considering them in the language teaching context. We then used a mixed-methods approach (Bryman, 2007), using principal component analysis (PCA) to investigate the pre-service teachers' responses to the Likert scale questions quantitatively and using theory-driven content analysis (Ward & Delamont, 2020) to analyse the open-ended question qualitatively. The PCA examined how the pre-service teacher's evaluations of the themes of sustainability differed when they considered them in relation to different backgrounds: their personal life, language teaching and teacher education, and their ability to integrate the themes into language teaching. The Likert scale answers were analysed using IBM SPSS Statistics version 26. We used KMO and Bartlett's initial solution for descriptive tests and the Varimax option with Kaiser normalization for the rotations. Small coefficients whose absolute value was below 0.4 were excluded from the analysis. Due to a high overall intercorrelation of the variables in all questions we did not analyse any causal relationships with social background variables (gender, age, education).

The groupings of the sustainability themes in each of the Likert scale questions were examined in the same way. A PCA analysis was conducted to identify the relevant sustainability themes for creating the summed variables. If a theme received values lower than 0.5 communality, it was excluded, and the remaining variables were used in the following PCA run. According to the PCA results, summed variables were created to reflect the sustainability theme groupings drawn from the data. Communalities, (i.e. sums of the squared component loadings representing the amount of variance in a variable accounted for by all the components), were used for grouping the variables. Communality values show how much of the variance in each variable is explained by all the other variables. All three questions yielded similar but different groups of variables (explained in more detail in Section V). We used the summed means of the Likert scale results to form new variables, using the themes grouped in each component. To analyse the degree of interrelationship among the variables that were used to make the summed variables, we used Cronbach's alpha as a measure of reliability. The reliability values were interpreted according to George and Mallery (2006), where 0.9 is excellent and 0.8 is good. We compared the summed variables visually for all questions using boxplot charts. We also visually compared the pre-service teachers' responses based on whether they had finished their teacher education programme.

The qualitative data for this study consisted of the responses of 20 pre-service language teachers to an optional, open-ended question about their opinions on the four dimensions of sustainability and their link to and importance in language teaching. All responses were initially categorized by P.L., after which three other authors (M.M., K.M., and L.M.H.) analysed the data independently using the same method. First, the responses were categorized based on the sustainability dimensions (i.e. ecological, economic, social, and cultural) they reflected (see examples in Table 2). As elucidated by these examples, each response could reflect more than one dimension. The interrater reliability values were high: ecological dimension (ICC = 0.90), economic dimension (ICC = 0.84), social dimension (ICC = 0.77), and cultural dimension (ICC = 0.91).

Table 2. Examples of the participants' responses categorized by sustainability dimensions.

Participant	Ecological dimension	Economic dimension	Social dimension	Cultural dimension
No. 11	Preventing climate change, preserving biodiversity.		In teaching, one could bring forth the idea, that for example you don't always need to fly to get to some country but there's also the train.	One should travel more responsibly considering the environment if one wants to get to know different cultures and languages.
No. 21	Recycling.	Personal financial situation, spending habits and budgeting are also such topics [to be addressed in the classroom].	Travelling, social topics, bullying and equality are topics that I think are meaningful to touch upon in language teaching.	
No. 29	Recycling, nearby nature.		Wider social topics could also be discussed in language teaching.	Topics are discussed in different languages and compare how different countries, different languages relate to the environment or cultures.

Second, the same responses were categorized based on whether language and/or culture were linked to pedagogical practices. These aspects of the cultural sustainability dimension were chosen because they were the ones that the pre-service teachers noticed and linked with pedagogical practices in their responses. These practices were analysed based on an ordinal four-step scale (see Table 3) denoting how much or little language and/or culture issues were linked to the pedagogical practices mentioned in the responses. The interrater reliability for the second categorization was also high (ICC = 0.87). The authors reached a consensus for the categorizations, the dimensions of sustainability, and the pedagogical practices by discussion. Using multiple sources and a mixed-methods approach, our aim was to avoid the weaknesses of single data collection and analysis methods (Bailey, 2006; Bryman, 2007) and thus increase the reliability and validity of the research.

Table 3. Four-step scale for categorizing the linkage between language educational aspects (language/culture) and pedagogical practices in the open-ended responses.

0. Language and/or culture is mentioned but not linked to the pedagogical practices: . . . internationality through connections. Is important. Important for the future. (No. 15)
1. Language and/or culture is mentioned at a general level, but no concrete pedagogical practices are mentioned: e.g. recycling, culture, internationality can easily be incorporated into language teaching as important and contemporary topics. It *is* important to cover sustainable development themes *also* in language teaching. (No. 19)
2. Language and/or culture is linked to at least one concrete pedagogical practice: One can recycle and print less. Tell about sustainable travel, because there are probably many who are inspired about traveling to the target country of their study language. It is important, so that the youth can learn about these already at school. (No. 24)
3. Language and/or culture is linked to several concrete pedagogical practices: Linguistic and cultural diversity fit very naturally into the content of language classes and as a theme of its own. One can for example introduce the plurilingualism of some country (e.g. Switzerland) and then compare it to Finland, directing attention in this way also to the plurilingualism of our own country. Textbooks often have themes relating to nature conservation, equality etc., which makes it easy to consider them even more widely during language classes and at the same time, e.g. practice for instance debating in a foreign language. (No. 23)

V Results

1 Pre-analysis of sustainability themes

An initial examination of the data for response frequencies showed that of the sustainability themes given in the questionnaire, most of the pre-service language teachers evaluated preventing bullying and internationality as being of the highest importance in language education (80.8% and 73.1%, respectively). Gender equality (61.5%), lifelong learning possibilities (53.8%), cultural environment and cultural heritage (61.5%), and both cultural (61.5%) and linguistic diversity (65.4%) were also seen as highly important. Because of the relatively small sample size for each category, the pre-analysis was

conducted merely to view the most popular responses connected to language teaching and teacher education.

2 Grouping of sustainability themes

The main quantitative analysis focused on the different groupings formed based on the pre-service language teachers' responses regarding the sustainability themes in relation to three components: (1) their personal lives; (2) their views on integrating them into language teaching and language teacher education; and (3) their feelings about their ability to teach them.

a Sustainability themes in personal life. First, we examined how sustainability themes were grouped when pre-service language teachers evaluated them from the aspect of personal importance. After the first PCA run, 7 out of 35 variables (i.e. the sustainability themes; see Table 1) received lower than 0.5 communality values and were excluded (societal involvement, recycling, sustainable industries and innovations, nearby nature and its wellbeing, responsible and sustainable consumer habits, internationality, personal financial situation). The remaining 28 variables were used in the PCA run for the three components. These extracted components explained 57.8% of the variance in the remaining variables (see Table 4; cumulative percentage). Cronbach's alpha values for each respective component were (1) 0.927, (2) 0.868, and (3) 0.861. Table 5 presents the summed variables and the sustainability themes that were most strongly explained by that component (communality loading over 0.650). These summed variables did not seem to have observable differences based on age, gender or teacher education programme.

Table 4. Total variance explained by three components in the PCA (principal component analysis) analysis for pre-service language teachers' evaluations of the importance of sustainability in their lives: Initial eigenvalues.

Component	Total	Percentage of variance	Cumulative percentage
1	11.516	35.988	35.988
2	3.787	11.833	47.821
3	3.199	9.997	57.817

When considering their personal lives, the pre-service teachers linked personal health and safety issues as a major aspect, and large global environmental problems were categorized as a second group. Aspects of equality were linked together with societal, cultural, and linguistic issues forming a third group.

b Sustainability themes in language teaching. Next, we investigated the grouping of sustainability themes when pre-service language teachers evaluated them based on their

Table 5. The summed variables and the grouping of sustainability themes when pre-service teachers evaluated them in relation to language teaching.

Factor	Loadings
1. Society, health and safety:	
Peace and justice in the society	.944
Preventing and intervening bullying	.815
Human rights and equality	.768
Safe neighbourhood	.730
Tolerance	.719
Democratic society	.707
Ensuring healthy life and wellbeing for everyone	.706
Equal education and lifelong learning possibilities for everyone	.692
Personal social health and wellbeing	.671
Personal physical health and wellbeing	.671
2. Sustainable development and environmental values:	
Sustainable economic growth	.832
Sustainable industries and innovations	.826
Adverse industrial effects to the environment	.782
Adverse agricultural effects to the environment	.754
Securing renewable energy for everyone	.745
Personal financial habits	.710
Securing renewable energy to everyone	.707
Responsible and sustainable consumption	.679
3. Cultural and linguistic values:	
Cultural diversity in Finland	.906
Cultural environment and heritage	.898
Linguistic diversity in Finland	.889
Internationality	.799

Notes. PCA factor loadings (Rotated Component Matrix) are shown after each variable. Loadings under .650 are not displayed.

relevance to language teaching. After the first PCA run, 4 out of 35 variables (i.e. sustainability themes, see Table 1) received lower than 0.5 communality values and were excluded (healthy diet, sorting waste, preserving biodiversity, adverse effects of traffic on the environment). The remaining 31 variables were used in the PCA run for three components. These extracted components explained 60.1% of the variance in the remaining variables (see Table 6; cumulative percentage). Cronbach's alpha values for each respective component were (1) 0.925, (2) 0.886, and (3) 0.953. Table 7 lists the summed variables and the sustainability themes that were most strongly explained by that component (communality loading over 0.650). No observable differences were found among these summed variables based on age, gender or teacher education programme.

For this aspect, sustainable development and environmental values were grouped together, including many themes from both the economic and environmental dimensions of sustainability. However, linguistic diversity, cultural diversity and heritage, and

Table 6. Total variance explained by three components in the PCA (principal component analysis) analysis for pre-service language teachers' perceptions of their ability to integrate sustainability into their teaching: Initial eigenvalues.

Component	Total	Percentage of variance	Cumulative percentage
1	9.661	30.190	30.190
2	5.849	18.279	48.470
3	3.731	11.660	60.130

Table 7. The summed variables and grouping of sustainability themes when pre-service teachers evaluated their importance in their personal lives.

Factor	Loadings
1. Health and safety:	
Personal social health and wellbeing	.907
Personal mental health and wellbeing	.884
Personal physical health and wellbeing	.828
Healthy diet	.789
Preventing and intervening bullying	.773
Ensuring healthy life and wellbeing for everyone	.763
Responsible travel	.709
Safe environment	.696
Sorting Waste	.693
2. Environmental values:	
Adverse industrial effects to the environment	.831
Actions to prevent climate change	.813
Securing renewable energy to everyone	.787
Preserving biodiversity	.744
Adverse environmental effects due to use of natural resources	.743
3. Societal, cultural and linguistic equality:	
Gender equality	.881
Human rights and equality	.854
Equal education and lifelong learning possibilities for everyone	.753
Cultural diversity in Finland	.704
Tolerance	.703

Notes. PCA factor loadings (Rotated Component Matrix) are shown after each variable. Loadings under .650 are not displayed.

internationality formed a well-defined group. A third group consisted of themes related to society, health, and safety, which also included aspects of equality.

c Ability to integrate sustainability themes. Finally, we investigated the grouping of sustainability themes in relation to the pre-service language teachers' evaluations of their

Table 8. Total variance explained by three components in the PCA (principal component analysis) analysis for pre-service language teachers' attitudes towards including sustainability dimensions in language teaching: Initial eigenvalues.

Component	Total	Percentage of variance	Cumulative percentage
1	10.328	39.724	39.724
2	3.202	12.317	52.040
3	2.517	9.682	61.722
4	2.268	8.724	70.446

ability to integrate them in language teaching. After the first PCA analysis run, 10 out of 35 variables (i.e. sustainability themes, see Table 1) received lower than 0.5 communality values and were excluded (preserving biodiversity, healthy diet, safe neighbourhood, ensuring a healthy life and wellbeing for everyone, adverse environmental effects due to use of natural resources, democratic society, societal involvement, personal physical health and well-being, personal mental health and well-being, and personal social health and well-being). The remaining 25 variables were used in the PCA analysis run for four components. These extracted components explained 70.4% of the variance in the remaining variables (see Table 8; cumulative percentage). Cronbach's alpha values for each respective component were (1) 0.888, (2) 0.876, (3) 0.861, and (4) 0.861. Summed variables and the sustainability themes that were most strongly explained by that component (communality loading over 0.650) are listed in Table 9.

The most visible difference in terms of the teachers' abilities was that global-level themes related to environmental problems and sustainable development were classified into a different group from concrete environmental actions. Consequently, unlike the other groupings, four groups were created instead of three. Human rights and equality formed a third group, and linguistic and cultural aspects fell into the fourth group. The visual inspection of these groupings showed that global environmental problems had a lower summed mean value than the other groups (see Figure 1). This trend was similar between pre-service teachers who had concluded their teacher education programme and those who had not. However, all sustainability aspects overlap and there is much variance; hence, these results should be interpreted with caution.

Notably, in the grouping of sustainability themes in relation to the pre-service language teachers' evaluation of their ability to integrate them into language teaching, the cultural and linguistic values variable was formed from only four themes whose communality loadings were all very high (between 0.8–0.91), making it the clearest grouping.

3 Pre-service language teachers' recognition of sustainability dimensions

In this subsection, we examine which dimensions of sustainability were reflected in the pre-service teachers' responses. Most participants named the social (16/20) and cultural dimensions (15/20) of sustainability. Half of them (10/20) named the ecological

Table 9. The summed variables and grouping of sustainability themes when pre-service teachers evaluated them in relation to their ability to integrate them into language teaching.

Factor	Loadings
1. Sustainable development:	
Sustainable industries and innovations	.890
Sustainable economic growth	.872
Securing renewable energy for everyone	.817
Adverse agricultural effects on the environment	.764
2. Human rights and equality:	
Human rights and equality	.889
Tolerance	.830
Justice and peace in the society	.787
Gender equality	.696
Preventing and intervening bullying	.684
Equal education and lifelong learning possibilities for everyone	.689
3. Environmental actions (personal level):	
Recycling	.892
Sorting waste	.874
Responsible travel	.732
4. Cultural and linguistic values:	
Cultural diversity in Finland	.885
Linguistic diversity in Finland	.858
Cultural environment and heritage	.851
Internationality	.714

Notes. PCA factor loadings (Rotated Component Matrix) are shown after each variable. Loadings under .650 are not displayed.

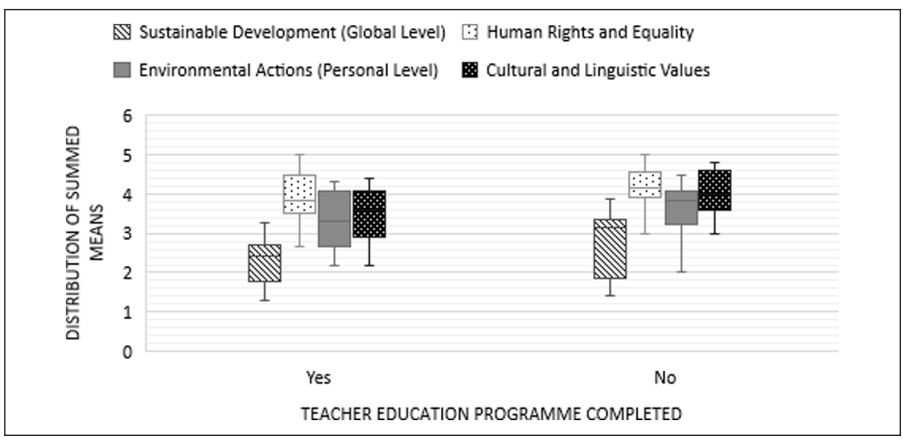


Figure 1. Variation in the summed variables investigating pre-service language teachers' perceptions of their ability to integrate sustainability in their teaching for pre-service teachers who had / had not completed their teacher education programme.
Notes. The vertical line inside the box indicates the median, and the *y*-axis represents the Likert scale answer mean values in each variable.

dimension in their responses, whereas only a few (4/20) mentioned the economic dimension (see Sass et al., 2021).

Over half of the pre-service teachers (11/20) combined language teaching with the social and cultural dimensions of sustainability (see Example 1). When discussing the social dimension, 16 participants mentioned items such as human rights, equality, participation and empowerment, and basic issues like health and education (see Example 2). Within the cultural dimensions, 15 pre-service teachers pointed out the importance of protecting cultural diversity. The economic dimension was considered by only four respondents, whereas ecological sustainability was mentioned in 10 answers; in this case, they suggested, for instance, that climate change could also be discussed in foreign language classrooms (see Example 3). In some responses, three dimensions (ecological, social, and cultural) were mentioned (see Table 3, No. 23). This last example illustrates a case in which the pre-service teacher had included all other dimensions in their answer except the economical dimension.

> Example 1. Linguistic and cultural diversity is part of Finnish society. In teaching languages, it is important to talk about everything that can be found in Finland. (No. 7)

> Example 2. The themes of sustainable development are universal, things that improve quality of life, so it would be good to include them [in teaching]. (No. 6)

> Example 3. [—] taking care of the [—] holistic welfare of people [—] and the environment [—] at a large scale is a topic that is particularly well suited to language teaching. (No. 9)

4 Pre-service teachers' views on their ability to implement sustainability in language teaching

Next, we investigated whether the pre-service teachers were able to name any concrete pedagogical practices linking sustainability to language teaching. Half of the respondents (11/20) mentioned sustainability on a general level, but they were unable to name any pedagogical concrete practice to combine sustainability issues with language and culture teaching. Only a few pre-service teachers mentioned one concrete practice (4/20) or several concrete practices (3/20) combining sustainability with language and/or culture issues. Two respondents did not mention sustainability or practices at all in their responses. Example 4 shows examples of pre-service teachers' responses from the four different categories.

> Example 4:

- Level 0 answers: Tolerance. Because it brings peace. (No. 20)
- Level 1 answers: Diversity of languages and cultures as a part of Finnish society. It is important for the teaching of many languages to highlight what all Finland has to offer. (No. 7)
- Level 2 answers: I think that cultural and linguistic diversity in Finland is important for language teaching, because it is good for students to identify themselves

as language users and to show that students in one classroom can be very multicultural, which is a richness. (No. 8)

- Level 3 answers: Sustainable development should be addressed in education, as everyone does not have sufficient knowledge of the small but important actions that can be taken at the individual level to ensure sustainable development. It would be useful to talk about practical actions, such as recycling and waste sorting, but on a broader level, it would be good to share information on issues such as climate change and its concrete effects on us. It would also be important to be able to discuss important social issues in other languages, so it would be good to integrate these topics into the curriculum. (No. 28)

The level 3 answer illustrates an ideal case and offers several practical methods and tools for integrating sustainability issues into language classrooms.

In the open responses, pre-service teachers ($N = 20$) referred to the implementation of sustainability in language teaching by using general verbs, such as *deal with*, *present*, *bring out*, *describe*, and *consider.* These verbs point to teacher-led activities in the classroom where it is implied that the teacher presents or raises these topics. Only a few participants mentioned learner-centred engaging activities, such as discussions (4/20), comparisons (1/20), and debates (1/20), as ways that sustainable topics could be taught. In general, pre-service teachers brought up topics that were linked to the social and cultural dimensions, such as linguistic and cultural diversity, internationalism, and cultural traditions. The attributes they mentioned were *important* (10/20), *difficult* (2/12), *good* (2/20), and *topical* (1/20). Expressions such as *can be*, *could be*, and *it would be good* were used by 11 out of 20 participants to express how possible or desirable they thought something was. For instance, one respondent stated that 'it would be good to talk about linguistic diversity in language lesson' (No. 13), which implies that the respondent considered it desirable to talk about linguistic diversity in the classroom, but they did not indicate whether this actually happened. The ecological dimension was often related to tourism, as the following example illustrates:

> Example 5. One can recycle and print less. Talk about sustainable travel, because many people are surely interested in travelling to the country of origin of a language. It's important so that the youth can learn about them already at school. (No. 24)

In summary, the pre-service teachers' responses often included very general comments that could not be interpreted as pertaining to sustainability per se. They seemed to acknowledge the social and cultural dimensions but lacked the ability or means to integrate them in their teaching. Although some participants were able to produce concrete, sustainable practices for language teaching, these were mostly teacher-centred.

VI Discussion

As expected, the sustainability themes that pre-service teachers evaluated as the most important in the language education context were related to either the cultural or social dimensions. These themes are already prominent in language education by way

of teaching about culture and using communicative methods (e.g. debates, pair/group discussions, peer reviews, project work, group presentations). In addition, social issues might seem more relevant to the school context than issues related to the environment or economy because they tend to be highlighted in many language curricula.

Similar to earlier studies (see Sass et al., 2021), the economic dimension was mentioned less explicitly and less often in the open-ended responses of pre-service teachers. As one respondent mentioned, it is easier to integrate economic and ecological issues into other contexts but integrating these issues into language teaching is difficult and too time-consuming. Although some pre-service teachers suggested some concrete sustainable practices for language teaching, these were mostly teacher-centred, as opposed to student-engaging practices that have been found beneficial in teaching sustainability (Öhman & Öhman, 2013; Monroe et al., 2019). As such, there is a need for language teacher education to provide information about the most efficient and recommended methods for sustainability education, such as project-based methods (e.g. Ferry, 2021).

The groupings of sustainability themes appeared different between the personal and professional viewpoints: when evaluating sustainability themes in relation to language teaching, the pre-service language teachers' evaluations tilted towards societal wellbeing and safety, including, for example, global themes related to peace, justice, tolerance, democracy, and equality. Hence, themes related to different aspects of equality were not linked to the same category as when the evaluation was done from a personal life perspective. Based on our results, equality was not considered an issue concerning language teaching but rather an overall societal issue, which would explain why it was not linked so closely with aspects of language teaching in the responses. The reason for this cannot be derived from our results, but it would be interesting to examine this aspect in future studies with a larger sample size. One possible reason equality was not considered an issue for language teaching could be that the pre-service teachers prioritized themes of sustainability that they were used to encountering in language textbooks and other materials, which they may therefore consider the most important. This theory is consistent with studies showing the importance of textbook materials in the content of teaching (Guerrettaz & Johnston, 2013).

The visual inspection of the groupings indicated that when the pre-service teachers evaluate their capabilities concerning environmental sustainability themes, they may feel more comfortable with teaching about tangible and visible individual actions, such as recycling, as opposed to global problems and climate change. The reasons behind this preference might lie in the lack of content knowledge about environmental problems or a feeling of uncertainty in teaching such complex issues. Language education does not traditionally include much environmental content, and providers of language teacher education have only recently started considering environmental issues, which has left language teachers often without sufficient knowhow to teach about global environmental problems. In addition, environmental issues are often thought to belong solely to natural science lessons, and more holistic ways of teaching sustainability have only recently begun to emerge.

On the other hand, cultural and linguistic sustainability themes were linked very closely when the pre-service language teachers evaluated their capabilities in sustainability teaching. This may indicate, quite expectedly, that the connections between

sustainability and language education are easier to find and understand because these aspects are already present in language lessons. This result is consistent with an earlier study among lower secondary school language teachers, who mainly incorporated socio-cultural aspects in the classroom (Uitto & Saloranta, 2017).

In the Finnish context, all Finnish L1 teachers are also qualified to teach Finnish as an L2, and they should have language teaching skills similar to those of teachers of other languages. However, some differences might exist in how both pre- and in-service Finnish L1 teachers consider sustainability issues compared to teachers of other languages. The difference is most likely to be in favour of L1 language teachers: Howard-Jones et al. (2021) observed that teachers of English L1 included much more climate change education in their teaching than foreign language teachers. In this study, we could not address this question further, but it would be an interesting topic for further research.

VII Conclusions

In this study, we investigated which dimensions of sustainability pre-service language teachers value in their lives, how they see their competencies at bringing sustainability into their language teaching in the future and what perspectives they have about integrating sustainability dimensions into language teaching. For this purpose, we developed a questionnaire to assess pre-service language teachers' perceptions and views of different sustainability dimensions, and how they felt about integrating them in their future teaching professions.

Above all, the findings indicate that pre-service language teachers especially recognize the social and cultural dimensions of sustainability and their importance in language teaching but that they do not necessarily feel sufficiently competent to implement them in their teaching. In addition, pre-service language teachers did not link equality as closely with the cultural and social aspects of language teaching as they did in their personal lives. If this were to be confirmed in further research, it would be important to investigate the reasons for this phenomenon.

Despite the relatively small total sample size, preventing wider generalizations, these results still indicate that there is a need for development and further research of sustainable language teaching pedagogy and pedagogical tools to aid teachers in integrating themes of sustainable development in their language classes. We can further conclude that in teacher education programmes, more attention should be given to how we can support teachers 'to look beyond the core content of their subject syllabi so as to also address more general goals related to environment, sustainability and citizenship' (Gericke et al., 2020, p. 194). In the future, subject teachers from different disciplines should be able to work together to foster sustainability education. Gericke et al. (2020) suggested two ways to implement cross-curricular work and collaboration: multidisciplinary cooperation and interdisciplinary collaboration.

Language teachers can play a crucial role in bringing social and cultural aspects into multidisciplinary cooperation and in promoting a more sustainable language-teaching culture. Many of the sustainability themes are already present in language classes, but it is important to give language teachers the means to recognize them and make them visible to learners. It seems that education about the methods best suitable for integrating

sustainability issues in language teaching would also benefit language teachers. Our results will directly aid the design of sustainability-related courses for pre- and in-service teachers, carrying implications in developing teacher education, teaching materials, language policies, and curriculum planning. Furthermore, this study increases awareness of sustainable features in language teaching and enables international comparisons.

Acknowledgements

The authors wish to thank the students who participated in the study and the anonymous reviewers for their insightful comments.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by Kone Foundation (grant number 202006277).

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Note

1. A holistic approach means integrating critical issues into the curriculum (learning content), using interactive and learner-centred teaching (pedagogy and learning environments), empowering individual transformation (societal transformation), promoting critical and systemic thinking, collaboration, and taking responsibility (learning outcomes) (UNESCO, 2010).

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Appendix 1

The questionnaire

Source. This document has been translated into English from the original questionnaire, which was written in Finnish.

Sustainable development in language teaching

The dimensions of sustainable development have been written in the UN goals of sustainable development. For more information, see United Nations Agenda 2030. We are studying how ethicality and sustainable development relate to language teaching. Therefore, we are collecting data from students of languages and language teaching. This survey will take approximately 15–20 minutes to complete.

Research is needed to develop research-based teacher education. We follow ethical guidelines for researchers in handling, storing and reporting data. The results will be reported in a manner in which individual students will not be recognizable. This research follows the requirements of the EU's common data protection regulations.

(Obligatory questions marked with *)

1. Age*
2. Gender*: female / male / other
3. First language / language*: Finnish / Swedish / Other(s), which?
4. What is your place of origin/birth?*
5. Have you lived abroad (outside Finland) for long periods of time? If so, please tell us where, when (year) and for how long?*

6. Have you attended school or studied in some other language apart from your first language? If so, please tell us where, which language, how long and when (year).
7. What is your major subject or degree programme?*
8. Starting year of your major studies*: 2018 / 2017 / 2016 / 2015 / 2014 / 2013 / if other year, please specify
9. For what purpose are you attending the course?* As part of the degree programme in language learning and teaching / as part of the minor subject of language learning and teaching / as part of specialization studies in your minor subject / none of these (a possibility to write an open answer)
10. Have you completed any studies related to sustainable development?*
    - I have completed basic studies in sustainable development (25 credits)
    - I have completed some study modules in sustainable development at some university
    - I have completed sustainable development studies at a vocational school, or equivalent
    - I have not completed any sustainable development studies
11. Have you completed the pedagogical studies for subject teachers?* Yes / No / I'm studying to become a class teacher
12. During which academic year are you going to complete / have completed the pedagogical studies for subject teachers?*
    - I have not completed the pedagogical studies
    - I will not complete the pedagogical studies
    - 2022–2023 / 2021–2022 / 2020–2021 / 2019–2020 / 2018–2019 / 2017–2018 / if other year, please specify

Four dimensions of sustainable development

It has been proposed that sustainable development consists of four dimensions. Please read the following short descriptions of these dimensions.

- Ecological sustainability means recognizing the Earth's carrying capacity and acting within those limits. This entails, among other things, actions to prevent and adapt to climate change and to nurture biodiversity.
- Social sustainability means securing health, wellbeing and their prerequisites from one generation to the next. This includes justice and fairness on a global scale. Social sustainability goals are human rights, equality, possibilities for participation and involvement and basic needs, such as food, housing, education and health care.
- Economic sustainability pursues a situation where the environmental effects of products are reflected in their price. Circular economy and economic instruments are concepts used in economic sustainability.
- Cultural sustainability refers to a community's ability to renew and maintain its existing strengths. This means, for example, openness to new ideas and agents. Central procedures include treasuring cultural diversity and strengthening the community's resilience.

13. What following themes are important to you in your personal life?* (1 = not at all important, 2 = not very important, 3 = somewhat important, 4 = important, 5 = very important)
    - adverse industrial effects on the environment
    - adverse environmental effects due to the use of natural resources
    - nearby nature and its wellbeing
    - actions to prevent climate change
    - adverse agricultural effects on the environment
    - responsible travel
    - recycling
    - sorting waste
    - securing renewable energy for everyone
    - saving energy/water
    - adverse environmental effects of traffic
    - preserving biodiversity
    - safe neighbourhood
    - peace and justice in society
    - democratic society
    - preventing and intervening in bullying
    - human rights and equality
    - tolerance
    - ensuring healthy life and wellbeing for everyone
    - personal physical health and wellbeing
    - personal mental health and wellbeing
    - personal social health and wellbeing
    - a healthy diet
    - increasing vegetarian food in diet
    - equal education and possibilities for lifelong learning
    - gender equality
    - societal involvement
    - internationality
    - cultural environment and heritage
    - cultural diversity in Finland
    - linguistic diversity in Finland
    - sustainable industries and innovations
    - responsible and sustainable consumer habits
    - personal financial situation
    - consumer habits based on personal lifestyle
    - Other / others, what / which? (Open question)
14. Please give a short explanation about which of the abovementioned themes is especially important in your personal life and why.
15. Which of the following themes are, in your opinion, important in language teaching and language teacher education?* (1 = not at all important, 2 = not very important, 3 = somewhat important, 4 = important, 5 = very important)
    - adverse industrial effects on the environment

- adverse environmental effects due to use of natural resources
- nearby nature and its wellbeing
- actions to prevent climate change
- adverse agricultural effects on the environment
- responsible travel
- recycling
- sorting waste
- securing renewable energy for everyone
- saving energy/water
- adverse environmental effects of traffic
- preserving biodiversity
- safe neighbourhood
- peace and justice in society
- democratic society
- preventing and intervening in bullying
- human rights and equality
- tolerance
- ensuring healthy life and wellbeing for everyone
- personal physical health and wellbeing
- personal mental health and wellbeing
- personal social health and wellbeing
- healthy diet
- increasing vegetables in diet
- equal education and possibilities for lifelong learning
- gender equality
- societal involvement
- internationality
- cultural environment and heritage
- cultural diversity in Finland
- linguistic diversity in Finland
- sustainable industries and innovations
- responsible and sustainable consumer habits
- personal financial situation
- consumer habits based on personal lifestyle
- Other / others, what / which? (Open question)

16. Describe in writing, which sustainable development themes you think can be considered in language teaching and how? Why would it or why would it not be important to consider sustainable development themes in language teaching?
17. Evaluate your own capability to include the following themes in teaching.* (1 = poor, 2 = rather poor, 3 = satisfactory, 4 = good, 5 = very good)
    - adverse industrial effects on the environment
    - adverse environmental effects of the use of natural resources
    - nearby nature and its wellbeing
    - actions to prevent climate change
    - adverse agricultural effects on the environment

- responsible travel
- recycling of items
- sorting waste
- securing renewable energy for everyone
- saving energy/water
- adverse environmental effects of traffic
- preserving biodiversity
- safe neighbourhood
- peace and justice in the society
- democratic society
- preventing and intervening in bullying
- human rights and equality
- tolerance
- ensuring healthy life and wellbeing for everyone
- personal physical health and wellbeing
- personal mental health and wellbeing
- personal social health and wellbeing
- a healthy diet
- increasing vegetarian food in diet
- equal education and possibilities for lifelong learning
- gender equality
- societal involvement
- internationality
- cultural environment and heritage
- cultural diversity in Finland
- linguistic diversity in Finland
- sustainable industries and innovations
- responsible and sustainable consumer habits
- personal financial situation
- consumer habits based on personal lifestyle
- Other / others, what / which? (Open question)

18. Imagine yourself as a teacher in the future. How will the learning content and teaching methods have changed by 2040?
19. My answers*: may be used for research purposes / may not be used for research purposes