

University language students' evaluations of ecological, social, cultural and economic sustainability and their importance in language teaching

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University
language
students'
evaluations

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Received 10 May 2023
Revised 31 August 2023
25 October 2023
6 November 2023
Accepted 21 November 2023

Abstract

Purpose – This study aims to explore how university language students evaluate different sustainability themes and examine the overall relevance of ecological, social, cultural and economic sustainability dimensions in language education.

Design/methodology/approach – A questionnaire was designed to study Finnish university language students' ($n = 55$) order of priority for sustainability dimensions and their sub-themes and the justifications for the priority orders using a mixed methods design. Qualitative content analysis was conducted using NVivo software, and weighted rankings were used to analyse the quantitative data.

Findings – The findings of the study showed that language students evaluated the social and cultural dimensions as the most relevant in language teaching. In all dimensions, students approached sustainability mainly by prioritising larger issues and advancing towards smaller ones. Most non-directional responses appeared in the economic dimension. In addition, individual prioritising and justification approaches varied between different sustainability dimensions.

Originality/value – To the best of the authors' knowledge, no previous studies have examined language students' evaluations of and justifications for all four sustainability dimensions. The results highlight the need to use multiple, holistic approaches and systems thinking to incorporate education for sustainable development.

Keywords Language teaching, Language teacher education, Sustainability, Education for sustainable development

Paper type Research paper

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The authors would like to thank the students participating in this study and Judi Rose for the translations of all examples in this article.

Funding: Kone Foundation has supported this research by providing a four-year funding for a project researcher and a post doc researcher and covering the overall research costs.



Abbreviations

ESD = Education for sustainable development; and
TEP = Teacher education programme.

1. Introduction

Sustainability is a complex concept that can be understood differently in different contexts, depending on whether the focus is on biodiversity, global health or some other aspect (Wals, 2009; Murillo-Vargas *et al.*, 2020). If sustainability is not the focus of teaching in faculties and teacher education programmes (TEPs), its integration can be demanding (Elliott and Inwood, 2019) because it often requires collaboration between many disciplines (de la Fuente, 2021). However, there is a lack of research particularly on the integration of education for sustainable development (ESD) in language lessons. The authors refer to sustainability as a common goal for striving towards a balance between human impact and Earth's carrying capacity, taking into consideration the sustainable development goals of United Nations' (2015) Agenda 2030 action plan. This perspective of sustainability encompasses not only the ecological dimension but also the social, cultural and economic aspects and their complex relationships.

In language education, sustainability is often considered in terms of its cultural and social aspects, such as linguistic and cultural equity and human rights issues (Wagner *et al.*, 2018; de la Fuente, 2021; Gunina *et al.*, 2021; Maijala *et al.*, 2023). Sustainable development is tightly linked to the concept of sustainability and in its ideal form, incorporates the idea of societal development and financial prosperity without using natural resources beyond their regeneration rate and without destroying natural habitats or threatening the survival of other species (United Nations, 2015).

The practical implementation of ESD depends heavily on the disciplinary teaching tradition, which for language teaching has usually been the using media normatively (Sund *et al.*, 2020). Large-scale, generalisable studies conducted among Nordic subject teachers have also indicated that language teachers do not thematise sustainability issues as much as other subject teachers (Borg *et al.*, 2012; Uitto and Saloranta, 2017; Sund and Gericke, 2020). Language teachers also include comparatively fewer sustainability dimensions (Uitto and Saloranta, 2017), which might affect how sustainability is portrayed in language lessons, for example by understating the deep interconnections between its dimensions. Moreover, the interdisciplinary character of sustainability is challenging for students (Abbonizio and Ho, 2020) and the connection to language teaching and learning may be difficult to find (Laine *et al.*, 2022). To incorporate the principles and practices of sustainable development into all levels of education (Rieckmann, 2017; Acosta Castellanos and Queiruga-Dios, 2021), further studies are needed on how language students understand sustainability in language education.

Compared to other school subjects, the role of sustainability in language teaching and language teacher education has, thus, far been less studied (Ganji *et al.*, 2020; del Carmen Pegalajar-Palomino *et al.*, 2021). Consequently, greater consideration of ESD is needed in TEPs (Sinakou *et al.*, 2018), and language teacher education could widen the scope of sustainability issues and holistic approaches to language teaching. Language teachers have great potential to promote societal changes (Bürgener and Barth, 2018; Weinberg *et al.*, 2020) because of the wide range of cultural and societal themes involved in language teaching and the vast array of interactive teaching methods available (Maijala *et al.*, 2023). To elucidate the challenges language teachers face and to better understand why language teachers incorporate aspects from fewer sustainability dimensions than some other subject teacher groups in their teaching, language students' ($n = 55$) understanding of the significance of sustainability dimensions in language teaching was analysed using a questionnaire.

2. Literature review

Discipline greatly influences the extent of sustainability included in lessons (Uitto and Saloranta, 2017; Sund *et al.*, 2020). Uitto and Saloranta (2017) showed that language teachers usually consider only one dimension or one holistic approach, compared with the teachers of biology, geography and history, who use at least three dimensions and several holistic approaches. The teachers' role in applying sustainability is important, as classroom practices have been shown to influence students' experiences and their engagement with sustainable development goals outside the school environment (Öhman and Sund, 2021). For example, pre-service teachers are not necessarily aware of the exact definitions of sustainable development (Selvi *et al.*, 2018), but they often have positive attitudes towards it and these attitudes get more positive after training on the subject (Tomas *et al.*, 2017; del Carmen Pegalajar-Palomino *et al.*, 2021), also increasing students' awareness of sustainability (Sommier *et al.*, 2022).

University education plays a key role in promoting sustainable development goals in society (James and Card, 2012; Finnveden *et al.*, 2019). The role of TEPs is crucial for developing a fair, sustainable and economically transparent society (Solis-Espallargas *et al.*, 2019). Future teachers need to acquire 21st-century competencies such as critical thinking, collaborative skills, problem-solving and decision-making [Frisk and Larson, 2011; United Nations Educational, Scientific and Cultural Organization (UNESCO), 2020]. Teachers should also be able to guide their students to apply these skills and work towards a sustainable future in a rapidly changing world (Wells, 2014; Wolff *et al.*, 2017; Hofman-Bergholm, 2018; Brandisauskiene *et al.*, 2020). ESD is the main tool teachers can use to raise awareness of sustainable choices and develop their students' sustainability-related skills and competencies. According to the UN, the core competencies the educators need are a holistic approach (which entails integrative thinking skills, being able to include variable world views and perspectives and the capacity to deal with complex systems), being able to envision change and enabling transformative actions (United Nations, 2011). Many methods beneficial in fostering ESD are already widely used in language education (Council of Europe, 2018; Barili and Byram, 2021; de la Fuente, 2021; Majjala *et al.*, 2023) and could be used in integrating ESD.

Increased research on sustainability in teacher education has revealed pre-service teachers' lack of practical skills on how to implement ESD (Sinakou *et al.*, 2018; Odell *et al.*, 2019) and to train their students as responsible actors for the future (Dahl, 2019; del Carmen Pegalajar-Palomino *et al.*, 2021). One of the challenges of teacher education is that future teachers should be trained to act as committed citizens, who can lead the way through new societal and environmental challenges (Merritt *et al.*, 2018). According to Hofman-Bergholm's (2018) review, higher education in Finland is unable to guarantee that teacher students acquire skills to teach sustainability issues. For example, systems thinking skills provide learners with an understanding of how the parts of the systems are interrelated and how different systems work and have influence on larger systems (Lewis *et al.*, 2014; Sinakou *et al.*, 2019). However, Palmberg *et al.* (2016) revealed that Nordic student teachers do not acquire systems thinking skills during their teacher education. As understanding the relevance of all sustainability dimensions and their interlinkages is essential for the development of systems thinking, more information on how language students evaluate the dimensions and themes related to them is needed.

Dahl's (2019) comprehensive study of students ($n = 578$) in seven teacher training programmes in European universities found that sustainability education is not a standard element of teacher education and that the emphasis given to sustainability varies between different teacher training programmes. Similar results were obtained by Koskela and

Kärkkäinen (2021), who examined Finnish teacher students' ($n = 116$) perceptions of change agency and sustainable development based on their writings. Their findings revealed that teacher students' perceptions of sustainable development were quite narrow. These results suggest that values and social questions related to sustainability might need to be addressed not solely on the content level, but also considering the methodology, that is, the pedagogy and teaching methods (Dahl, 2019; Maijala *et al.*, 2023).

Attitudes and opinions related to sustainability may vary considerably based on the local educational context as highlighted in the following examples. Female Iranian undergraduate college students from various fields were more aware of sustainable development than male students (Bahae *et al.*, 2014), and in the Nordic context, Finnish pre-service teachers ($n = 55$) preferred to address local, small-scale actions instead of global environmental problems in the classroom, and mentioned mostly teacher-centred practices (Laine *et al.*, 2022). A survey of university English courses in Turkey and Russia revealed that Russian English learners considered economic growth, employment and job opportunities to be the most important contents, while in Turkey, social and equal educational opportunities and the possibility of continuous learning were considered the most important (Gunina *et al.*, 2021).

To conclude, interdisciplinarity (Abbonizio and Ho, 2020) and integrating all sustainability dimensions into language teaching (Maijala *et al.*, 2023; Borg *et al.*, 2014) pose a challenge for language education, and research on language students' understanding of these issues is crucial for the development of both sustainable practices and ESD in language teaching.

3. Study design

3.1 Research questions

The study aims to answer the following research questions:

- RQ1. How do language students prioritise different aspects of sustainability in their personal lives?
- RQ2. How do language students prioritise ecological, social, cultural and economic sustainability in relation to their relevance in language teaching?
- RQ3. How do the language students justify their order of priority and do the justifications differ between the four sustainability dimensions?

3.2 Context of the study and data collection

In Finland, pedagogical studies for the one-year TEP providing subject teacher's competence are organised by departments of teacher education in different universities. Teacher training schools offer facilities and supervision for practical training which can be done separately or during the year of pedagogical studies.

The data were collected in 2021 using a questionnaire in a master's degree programme course (five European Credit Transfer and Accumulation System credits, ECTS) in language learning and teaching (120 ECTS) at a Finnish university by three of the authors, who were teachers of the course. Most course participants graduate as language experts or language teachers after their TEP. The responses were collected anonymously via an electronic system to highlight their voluntary nature and unrelatedness to course grading. This form of data collection was used because of limiting time restrictions, and because due to recent

COVID-19 restrictions, students were considered to be comfortable answering an anonymous online questionnaire.

3.3 Participants

The participants in this study were major students ($n = 55$) of various languages. Only the responses of students who agreed upon the terms and usage of their responses according to a privacy notice were analysed. Coding was used to ensure participant anonymity (ID01–ID55). The majority of the participants had either already finished their TEP or were currently undergoing it (23/55; 41.8% and 15/55; 27.3%, respectively). In addition, nine students had either been accepted into TEP studies or were going to apply during their university studies, while eight students were oriented towards other fields of expertise in language education.

Only two participants had conducted some prior studies in sustainable development. The authors did not estimate the level of the students' overall knowledge of themes related to sustainable development; instead, the essential information needed to understand the questions at the beginning of the questionnaire was provided. In the questionnaire, ecological, social, cultural and economic sustainability dimensions and their interconnectivity were shortly explained. This was done to ensure that all students could answer the questions despite their initial knowledge of sustainable development and its dimensions. Outside the TEP practice, 14 students had less than one year of language teaching experience, four participants had one to five years and most students (37/55; 67.3%) reported having no experience at all. This possible difference in experience might affect the results concerning the general ranking of the sustainability dimensions in relation to language teaching but was not analysed in more detail.

3.4 Data analysis

3.4.1 Quantitative analysis of the ranking of sustainability dimensions and their sub-themes.

To address the first research question of how language students prioritise different aspects of sustainability in their personal lives, the questionnaire had four similar parts, in which the students were asked to rank sustainability themes (see [Table 1](#)). These themes were categorised into different sustainability dimensions based on the authors' interpretations of which dimensions the chosen sub-themes associated with. The division into sub-themes was designed to provide an approximate idea of the trends and differences in justifications when the students were considering the sub-themes under different dimensions. Information to form the sub-themes for each category were obtained from the topics used by the media to mirror the themes that the students had most likely encountered without having taken any special courses on sustainability. The themes interlink both within and between the sustainability dimensions, and not one correct way to categorise them exists. This being stated, the logic behind the categorisation in this study was the following: (1) sub-themes in the ecological dimension relate directly to ecosystem services, biodiversity and conservation at a broad scale and often require voluntary actions by individual people or non-profit organisations, (2) sub-themes in the social dimension relate to global, human rights-based broad themes, (3) sub-themes in the cultural dimension relate to more specific themes that often vary between cultures, and are mostly sustained within communities and (4) sub-themes in the economic dimension relate to issues that are mostly directed by national governments and which are more clearly linked to political decisions driven by national economies and the global economy.

The students were given 10 sub-themes under each sustainability dimension (see [Table 1](#)) and were asked to consider their significance in their personal lives and to place them in order

Table 1.
Sustainability
dimensions and their
sub-themes used in a
questionnaire
studying how
students prioritise
different aspects of
sustainability

Ecological sustainability	Social sustainability	Cultural sustainability	Economic sustainability
Promoting recycling	Promoting gender equality	Promoting societal justice	Saving energy
Mitigating climate change	Strengthening democracy	Preserving cultural heritage	Favouring vegetable-based food
Securing biodiversity	Promoting world peace	Promoting societal well-being	Reducing industrial emissions
Nature conservation	Securing human rights	Promoting equal access to legal services	Reducing agricultural emissions
Reducing air pollutants	Securing minority rights	Favouring responsible travel	Reducing traffic emissions
Wetland conservation	Ensuring possibility to influence	Supporting different art forms as part of culture	Developing environmentally friendly technology
Reducing litter	Preventing bullying	Preserving linguistic diversity	Enhancing waste recovery
Preventing environmental chemicalisation	Maintaining health	Promoting intercultural collaboration	Developing low-carbon energy solutions
Securing ecosystem services	Securing a social security system	Supporting minority cultures	Reducing indebtedness
Protecting animal rights	Securing employment	Enhancing overall security	Limiting the use of natural resources

Source: Authors' own work

from 1 to 10, with 1 being the most important and 10 the least important. It was mandatory to rank at least the top three most important ones, which means that the number of responses in every sub-theme varied depending on how many students ranked only from 1 to 3 and how many from 1 to 10. The percentages were calculated for all sub-themes in all sustainability dimensions accordingly. All of the questions were analysed by calculating the percentages of students out of all students ranking each sub-theme as the first, second and third most important. To allow comparisons between the sub-themes, weighted ranking scores were calculated using the following formula:

$$(X_1 W_1 + X_2 W_2 + X_3 W_3) / N$$

where X = the response count of each option, W = the weight of the ranked position and N = the number of students ranking the sub-theme in question. The first position was assigned a weight of 3, the second position a weight of 2 and the third position a weight of 1. Hence, a higher ranking score indicates a relatively higher ranking of a particular sub-theme.

At the end of the questionnaire, the students were asked to rank the four sustainability dimensions based on their understanding of their significance in language teaching. The responses were analysed to answer the second research question of how language students prioritise ecological, social, cultural and economic sustainability in relation to their relevance in language teaching. The percentages of students ranking the dimensions as the first, second, third and fourth most important were calculated. The same formula as before was used to calculate the ranking score, with the exception that the weights were assigned starting from the first position having a weight of 4, the second position 3, the third 2 and the fourth 1.

3.4.2 Qualitative content analysis of the open-ended responses. The open responses were analysed using inductive qualitative content analysis. Data were organised within NVivo software (version 12) through coding. All responses were divided according to the sustainability dimension it belonged to (ecological, social, cultural or economic). Students' justifications were coded as a whole across all dimensions into the following categories: *from large to small*, *from small to large* and *no direction*. The total number of analysed responses was 214, because one student chose not to justify any of the dimensions, which lowered the participant number into $n = 54$, and two students left out answers in one dimension (total number of responses = $4 \times 54 - 2 = 214$). The categories allow for various interpretations of large and small, such as global versus local importance, community versus individual level and wider societal impact versus personal relevance. When the students neither mentioned nor implied any direction, the response was coded as *no direction*. The number of responses for each category in different sustainability dimensions was calculated and statistical differences were tested using non-parametric analysis methods in the IBM SPSS statistics programme. In addition, the authors identified the most common subjects mentioned in the students' justifications and coded them into three subcategories (place and scale, who is responsible and mutual influence) such that one justification could include several different subjects. Furthermore, individual variations in the students' approaches to the sustainability dimensions were evaluated. All response examples shown in the following sections have been translated from Finnish by a native English language translator.

4. Findings

4.1 Ranking of different sub-themes of sustainability in relation to students' personal lives

Of the 10 sub-themes under ecological sustainability, the weighted ranking scores revealed that "mitigating climate change" was the most popular choice with a score of 2.12. The first and most important sub-theme of the social dimension of sustainability was "securing human rights" with a ranking score of 2.08, in the cultural dimension "promoting societal justice" (1.88) and in the economic dimension "reducing industrial emissions" (1.22). Highest five ranking scores of the sub-themes for all dimensions is presented in [Table 2](#).

4.2 Ranking of sustainability dimensions in relation to language teaching

When asked to rank the four sustainability dimensions in order of importance based on their significance in language teaching, most students placed the social and cultural dimensions as the first and most important (both 20/55; 36.36%; [Table 3](#)). The same dimensions were also ranked the highest as the second most important dimension, with social sustainability receiving 38.18% (21/55) of the responses and cultural sustainability receiving 29.09% (16/55). Ecological sustainability was ranked as the third most important dimension by 47.27% (26/55) of the students, and economic sustainability was ranked as the least important dimension with the most responses (36/55; 65.45%). The weighted ranking placed the dimensions in the following order from the first most popular choice to the least: social (3.7), cultural (2.82), ecological (2.47) and economic (1.64).

4.3 Justifications and common subjects in the ranking task

After ranking the sub-themes of each sustainability dimension, the students were asked to provide justifications for their rankings. The responses were used to answer the third research question regarding the nature of justifications and the possible differences between different sustainability dimensions. The qualitative content analysis of the students' responses showed that underlying their ranking orders, directionality of either

Table 2.
The five highest student rankings of the sub-themes of ecological, social, cultural and economic sustainability

<i>Ecological sustainability</i>	Mitigating climate change	Securing biodiversity	Nature conservation	Promoting recycling	Wetland conservation
N ^a	52	47	47	45	44
Not ranked ^b	3	3	8	10	11
Ranking score ^c	2.12	0.87	0.62	0.62	0.57
<i>Social sustainability</i>	Securing human rights	Promoting world peace	Strengthening democracy	Maintaining health	Securing minority rights
N ^a	51	46	36	41	39
Not ranked ^b	4	9	16	14	16
Ranking score ^c	2.08	1.13	0.82	0.73	0.56
<i>Cultural sustainability</i>	Promoting societal justice	Promoting societal well-being	Enhancing overall security	Preserving cultural heritage	Preserving linguistic diversity
N ^a	49	49	46	38	40
Not ranked ^b	6	6	9	17	15
Ranking score ^c	1.88	1.45	1.35	0.53	0.48
<i>Economic sustainability</i>	Reducing industrial emissions	Limiting the use of natural resources	Developing environmentally friendly technology	Developing low-carbon energy solutions	Saving energy
N ^a	45	40	43	43	41
Not ranked ^b	10	15	12	12	14
Ranking score ^c	1.22	1.03	1.02	1.00	0.88

Notes: ^aNumber of students who ranked this sub-theme out of a total of 55 students; ^bNumber of students who did not rank this sub-theme at all; ^cRanking score has been calculated using weighted rankings: first position rankings were given a weight (W) of 3, second position a weight of 2 and third position a weight of 1, and the total sum of rankings was divided by the number of rankings in each sub-theme (N). Ranking score shows the relative order of importance of the sub-themes

Source: Authors' own work

sustainability issues themselves or the efforts towards sustainability was evident in many responses. However, some responses did not include any direction and showed a variety of approaches to the ranking task. In addition, within each category in 211 responses, students mentioned some common subjects that arose from the justifications (see Table 4): place and scale of the issues ($n = 49$), who was responsible for the problem and its solution ($n = 35$), and the mutual influence of all sub-themes on other sub-themes ($n = 127$). Next, the directional categories and their common subjects are specified in more detail.

4.3.1 *Direction from large to small.* Over half of the responses (120/214; 56.0%, Figure 1) across the responses under all four sustainability dimensions displayed a way of thinking from large to small, which prioritises sub-themes that have a larger scale or involve the majority of people or issues:

Example 1.

The three most important areas for me help to guarantee an equal and safe life for everyone. We must start with the basics and move towards the smaller details. (ID22)

Justifying rankings with the interconnectedness of global and local issues arose mostly within the category *from large to small* and a lot less frequently in the other two categories. Mostly in the ecological dimension students explained, that to reach one goal, others would also have to be achieved:

Order of importance ^a	Ecological	Social	Cultural	Economic
First (W = 4)	9 16.36%	20 36.36%	20 36.36%	6 10.91%
Second (W = 3)	14 25.45%	21 38.18%	16 29.09%	4 7.27%
Third (W = 2)	26 47.27%	12 21.82%	8 14.55%	9 16.36%
Fourth (W = 1)	6 10.91%	2 3.64%	11 20.00%	36 65.45%
Ranking score ^b	2.47	3.07	2.82	1.64

Notes: ^aNumber of students and the percentage out of total N ; ^bRanking score was calculated using weighted rankings: First position rankings were given a W of 4, Second position W of 3, Third position a W of 2 and Fourth position a W of 1 and the total sum of rankings was divided by the total number of responses (n). The ranking score shows the relative order of importance of the dimensions

Source: Authors' own work

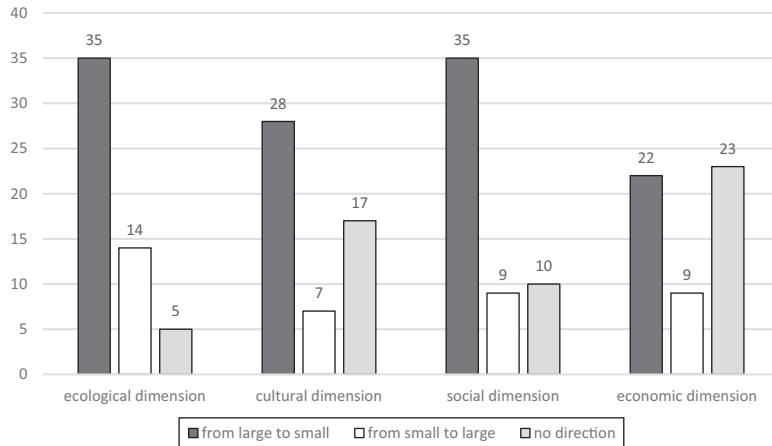
Table 3.
Students' ranking of all sustainability dimensions in relation to their importance in language teaching ($n = 55$)

Sustainability dimension	Place and scale	Common subject Who is responsible	Mutual influence
Ecological	7	9	41
Social	22	2	33
Cultural	15	2	30
Economic	5	22	23
<i>Total</i>	49	35	127
<i>Total number of students</i>	40	26	48
<i>Percentage of students</i>	73%	47%	87%

Source: Authors' own work

Table 4.
The number of common subjects mentioned at least once ($n = 211$) in language students' justifications in different sustainability dimensions

Figure 1.
The number of responses ($n = 214$) coded into categories from large to small, from small to large and no direction in all four sustainability dimensions



Note: There was no statistical difference between the dimensions in the number of responses for each category

Source: Authors' own work

Example 2.

Controlling climate change and safeguarding biodiversity are the more important goals, in my opinion, and succeeding calls for fulfilling the other areas as well. (ID02).

In other dimensions, some students acknowledged the intersections and mutual dependencies between the various sub-themes:

Example 3.

I thought I would start from a broader perspective. Promotion of justice could, in a way, include the rest of these – the promotion of social wellbeing, too. Cultural diversity and a lack of understanding between cultures cause friction, so it would be good to invest in implementing in the other areas as well. (ID18)

Other responses emphasised the wider impact of the sub-themes. These students prioritised the sub-themes they thought to be relevant on a global scale rather than on an individual/local one:

Example 4.

I put some of the less important options down below because they are very local, and I put global problems as the most important. (ID01)

The most common subject (Table 4) within this category was mutual influence among the sub-themes ($n = 99/127$; 78.0%). Another common subject that students mentioned frequently ($n = 17/49$; 34.7%) and particularly often in the responses related to the social dimension ($n = 10$) in the category from large to small, was the place and scale of the sub-themes. They described where these aspects would be most relevant locally and at what scale they would affect people; on a personal, local, regional or global level.

4.3.2 Direction from small to large. The responses (39/214; 18.2%, Figure 1) coded from small to large showed a more personal approach and the responses tended to prioritise sub-themes perceived as being of a smaller scale or at a rather individual level:

Example 5.

I think public safety should always come first. I also feel that safeguarding cultures and languages takes priority. Once the things that affect people 'directly' are in order, we can concentrate on supporting art and travel. (ID22)

Some of these responses showed that the students prioritised a concrete approach over an abstract one:

Example 6.

It's difficult to give a straightforward answer, but what I appreciate most is tangible actions, which are easier to acknowledge and more meaningful to act upon. (ID7)

In addition, students saw interdependencies between the sub-themes of sustainability in the different dimensions, but they explained their ranking from an opposite perspective compared with the responses in the direction *from large to small*: by addressing one rather concrete topic of supposedly small scale, many issues of larger scale could be solved:

Example 7.

It all starts with reducing littering. If we can reduce littering, we can protect the waterways and nature, control climate change, etc. (ID09)

Within this category, the most common subjects (Table 4) arising from students' answers were connected to their opinion of who is responsible for sustainable development ($n = 17/49$; 34.7%), and the place and scale of the issues ($n = 18/35$; 51.4%).

4.3.3 Responses with no directionality. Justifications for the rankings were quite variable in the responses with no directionality (55/214; 25.7%, Figure 1). Some mentioned one of the sub-themes as being particularly important, either to them personally or in general, without putting it in relation to the other sub-themes:

Example 8.

Human rights and equality are some of the most important values for me. (ID14)

In other cases, students simply stated they were unable to justify their ranking (ID23) and others further explained it with their unfamiliarity with the topic:

Example 9.

I can't, really, because unfortunately, the subject is a bit remote for me. I answered intuitively. (ID02)

In some responses, the sub-themes were considered either all equally important or overlapping and depending on each other so significantly that it was hard to choose the most important one. Some students wrote down their thoughts on the task in a general manner, neither directly explaining their ranking nor showing the directions mentioned above:

Example 10.

Should people favour sustainable travel? Is travel, in general, really necessary? (ID25)

In this category, the most common subjects (Table 4) were linked to the mutual influence among the sub-themes ($n = 14/49$; 28.5%), as well as the students' opinions on the place and scale ($n = 14/127$; 11.0%).

4.4 Differences in justifications between sustainability dimensions

In this section, the authors explore how the justifications for language students' priority orders differed among the four dimensions of sustainability. There was no statistical difference in each directional category between the sustainability dimensions, which means that their distribution was similar in all of them (see Figure 1). However, the category *from*

large to small was the most frequent overall ($n = 120$), and it was the most frequent in every dimension except the economic one, which comprised relatively many responses that showed no sense of direction.

To elaborate on their ranking order, some students explained that they lacked knowledge of economic sustainability. Other justifications in this dimension that showed no sense of direction included comparisons and/or linkages between economic and ecological sustainability:

Example 11.

Putting innovation first allows us to create alternatives to current methods, which makes reducing emissions easier. (ID05)

Only a few students (9/54; 17%) justified their responses in the same direction throughout all four dimensions (Table 5). Of the students, 35% (19/54) changed their direction between two options, such that three dimensions had the same direction and one response some other direction. Alternatively, the students (16/54; 30.0%) used all three directional categories such that one category was represented in two dimensions, and the two remaining categories in variable combinations for the other dimensions. Finally, there were students (10/54; 18.5%) whose responses showed only two directional categories, meaning that two dimensions were justified using one category and the other two dimensions using some other category.

5. Discussion

Consistent with earlier research, the sustainability dimensions that the students thought to be most relevant in language teaching were the social and cultural dimensions. Prioritising these aspects of sustainability may in part explain the tendency of language teachers to incorporate fewer sustainability dimensions in their teaching than some other subject teachers (Uitto and Saloranta, 2017). Considering the dimensions more broadly, most language students approached sustainability by prioritising larger issues (e.g. global and relevant to a majority of people) and advancing towards smaller ones (e.g. local and personally relevant). If most language students tend to approach sustainability themes from a global perspective, they could be addressed first in language lessons and then connect the

Table 5. Differences in the perceived directions in individual students' justifications ($n = 54$) between the four dimensions of sustainability (ecological, social, cultural and economic)

Most prominent direction	Same category throughout	Category distribution ^a 3/1	Category distribution ^b 2/1/1	Category distribution ^c 2/2
From small to large	1	1	5	
From large to small	7	16	10	
No direction	1	2	1	
From large to small	No direction			5
From large to small	From small to large			3
From small to large	No direction			2

Notes: ^a3/1 signifies that responses in three dimensions were justified using the most prominent direction and in one dimension with some other direction; ^b2/1/1 signifies that responses in two dimensions were justified using the most prominent direction and two other dimensions with two different directions; ^c2/2 signifies that responses in two dimensions were justified using the same direction and the other two with some other direction

Source: Authors' own work

themes to local issues. This approach would support the observed tendency of students to link different sub-themes and integrate them into a wider perspective. In addition, the students' prioritising and justifications showed individual variations between the sustainability dimensions. Hence, varying the scale and angle of approach in language teaching might encourage a wider range of students to take an interest in sustainable development than using a one-sided approach.

Over half of the students considered "securing human rights" to be the most important sub-theme of social sustainability, "promoting societal justice" received support from 20/49 of the students under cultural sustainability, and students were unanimous in choosing "mitigating climate change" as the most important sub-theme of ecological sustainability. The most popular sub-theme for economic sustainability was "reducing industrial emissions". Recycling as a local action was included in the top three, with the global issues of "climate change mitigation" and "securing biodiversity". It is possible that these results reflect the themes, both global and local, that have been addressed the most in the media, especially because prior research has shown that language teachers often use the media, for example environmental news published in the areas where the target language is used, as material for sustainability education in their lessons (Sund *et al.*, 2020).

The directional approaches were also reflected in the justifications that the students gave for their choices, showing alternative ways to process sustainability issues. Ecological aspects of sustainability seemed to be well known to the students and they seemed to be able to connect them into their own actions. One reason for this outcome could be that environmental education was the first educational trend aiming at sustainability, trying to change people's behaviour to become more positive towards nature. Only later was this concept expanded to ESD, which involved aspects outside ecological sustainability (Acosta Castellanos and Queiruga-Dios, 2021).

Some students whose responses showed a direction *from small to large* prioritised concrete approaches because they seemed comparatively easy to do or the results were particularly noticeable. The students' consideration of personal actions related to the sustainability themes, on the other hand, suggested that they were able to link the theoretical task to their own reality. When considering economic sustainability, however, many students did not show any direction in their prioritising. This lack of direction could be due to a number of reasons, such as the lack of either knowledge on or interest in economic issues, or unfamiliarity with economic sustainability compared to the other sustainability dimensions. This result is consistent with prior studies showing that language students and teachers are often less familiar with economic sustainability and tend to concentrate on other dimensions (Borg *et al.*, 2014; Uitto and Saloranta, 2017). Overall, the responses with no direction conveyed that all the sub-themes were important to many students and, therefore, the task given to them felt difficult.

One frequently mentioned subject in the justifications of students' priority orders was mutual influence among the sub-themes, especially when the students considered ecological sustainability. These results reflect a tendency to try and connect different sub-themes in each sustainability dimension, which is promising from an educational viewpoint, as it further supports the use of an overarching approach to sustainability and underlines the importance of applying several holistic approaches in teaching (Sinakou *et al.*, 2019). This type of systemic thinking approach should be considered in language teaching and could be readily incorporated into language teacher education (Maijala *et al.*, 2023). According to our results, language students are often already, either instinctively or informedly, aware of the interconnectedness of the dimensions and their sub-themes, which would suggest that the change of focus into certain dimensions results rather during the course of language teacher education and the professional career. Therefore, it would be highly beneficial to include a

more holistic view of sustainability into the TEPs and continuous teacher education, and endeavour towards transforming language teacher education in various contexts to develop competencies that support sustainable actions.

The context of this study is an affluent northern European setting, and the results are not automatically transferable to other contexts. As the local context is an important determinant in how sustainability is emphasised, the justifications and priority orders elsewhere might differ from the northern perspective, and a larger data set from various locations would allow for a wider generalisation of the results. It should also be noted that despite the efforts to provide enough information, the participants may understand and interpret the sub-themes used in this study differently, which might have caused some of the variations in the justifications and ratings. The division into dimensions is artificial by default, but it was used to examine possible differences in their evaluation. Furthermore, the changed political atmosphere in Europe might give a different result for a repeated questionnaire because of the increased attention given in the media to certain sub-themes, such as “promoting world peace” or “intercultural communication”.

6. Conclusions

The results of this study support the current recommendation of using multiple holistic approaches and systems thinking to incorporate ESD [United Nations Educational, Scientific and Cultural Organization (UNESCO), 2020], which could be used to develop language teacher education for sustainability. Universities are on the frontline in promoting the goals of sustainable development in society (Solis-Espallargas *et al.*, 2019), and language teacher education can build a foundation for future language teaching by equipping teachers with the skills, competencies (Frisk and Larson, 2011) and understanding needed to integrate sustainability and ESD into their classes. According to the research, attitudes towards teaching sustainability are mostly positive and encouraging for the development of ESD. However, teacher education even in the Nordic context, which is otherwise quite progressive in promoting sustainability, is not currently sufficient at providing sustainability competencies, and falls short particularly in developing students’ systems thinking, meaning the ability to connect and evaluate different aspects and their relationships (Palmberg *et al.*, 2016; Sinakou *et al.*, 2019).

It is essential that teacher education recognises the role of teachers as drivers of transformation – that is, their change agency (Bürgener and Barth, 2018; Weinberg *et al.*, 2020). In language education, more training in understanding ecological and economic sustainability is needed, but emphasis could be placed on areas most closely linked to language teaching, such as aspects of cultural and social sustainability. Most importantly, students’ existing ability to understand the interconnectedness and mutual influence of multiple aspects should be encouraged and used as a resource and develop their systems thinking skills within the context of language learning. Language teacher education, on the other hand, should be developed such that it can provide future language teachers with skills and knowledge to train students in various competencies such as decision-making, critical thinking, collaborative skills and problem-solving, which enhance sustainable development goals and widen the scope and importance of language education on a global scale.

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Further reading

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