

Research Article

Transformative journey of preservice English teachers towards a sustainable society

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Although the teaching of English can significantly contribute to the teaching of environmental topics, the integration of ecological literacy into language teaching is not supported by English teachers because they feel uneducated in this field. In the current study, we aimed to explore the experiences of preservice English language teachers as they learn to integrate ecological literacy into their teaching practices. The study utilises Ecopedagogy as a framework to emphasize the role of English teachers in promoting environmental awareness and contributing to a sustainable society. The study was conducted as part of an eleven-week program aimed at enhancing the ecological literacy skills of 11 preservice English language teachers enrolled in an undergraduate course on modern teaching approaches. Data were collected through two reflection papers and individual semi-structured interviews. The thematic analysis focused on shifts in the preservice English language teachers' understanding of environmental issues and their roles in promoting environmental sustainability within their future classrooms. The results revealed significant changes in the preservice English language teachers' perspectives regarding environmental issues and their responsibilities as educators in fostering sustainability. These shifts highlight the potential of integrating ecological literacy into English language teaching practices. Additionally, the study underscores the need to incorporate ecological education into teacher training programs to prepare future educators for fostering an environmentally conscious and sustainable society. Finally, the study suggests that enhancing ecological literacy in teacher preparation can play a crucial role in shaping future generations' environmental awareness.

Keywords: Ecological literacy; Ecopedagogy; English language teaching; Environmental sustainability; Preservice teachers

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1. Introduction

In today's rapidly changing world, the role of teachers transcends the traditional understanding of transferring the content of the subject to their students to promote the essential skills needed for the current era. Among many other professions, teachers hold the unique position and power to shape and transform future generations. Especially, language teachers have the potential to drive meaningful change by incorporating environmental education principles into their teaching methods. This case study aimed to explore the experiences of preservice English language teachers [PSETs] as they navigate their journeys toward becoming advocates for ecological literacy, with the

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goal of contributing to the establishment of an eco-friendly society.

1.1. Theoretical Framework

Ecopedagogy is a suitable educational approach that can be utilised to teach about the environment and natural world (Gadotti, 2008) since Ecopedagogy sees environmental crisis as a pedagogical concern and aims to integrate ecological issues into the curriculum to contribute to environmental sustainability (Davis, 2013). That is why Ecopedagogy can be considered a kind of "transformative environmental education which critically and dialectically deconstructs how social conflicts and environmental devastation are connected" (Misiaszek, 2011, p. 1). Furthermore, Ecopedagogy differs from other educational approaches in that it has a special focus on protecting nature, the effects of human societies on the environment, and establishing a sustainable society that maintains an ecological perspective.

Educational approaches that possess radical, critical, and liberating principles need to include ecological considerations (Freire, 2016). The role of education, in this sense, is quite significant since it lays a bridge between scientific knowledge and societal change (Merritt et al., 2019). Thus, adopting an educational approach that is supported by Ecopedagogical pedagogy might facilitate the establishment of a society that possesses ecological literacy skills and takes action based on these skills. Such an education is vital to transform societies into eco-friendly and sustainable ones. Therefore, possessing ecological literacy bears critical significance because it requires individuals and societies to have a deep understanding of the functioning of physical systems and cause-and-effect relationships in socio-environmental systems and take active roles in the decision-making processes to solve the problems derived from environmental imbalance. Additionally, more rational decisions could be made regarding the environment if individuals adopt ecological thinking and scientific knowledge, which are acquired through ecological literacy (Lewinsohn et al., 2015). So far, attempts to solve these kinds of problems have been seen as the duty of governments and corporations; therefore, citizens have not been active enough to contribute to the solutions (Orr, 1992). However, it is already time for each individual to take an active role in the decision-making process about environmental issues and have deep insights into humans' connection with nature. This can only be guaranteed through ecological literacy since it fosters admiration and care for other humans, other living beings, and their essential ecological needs for existence.

1.2. Ecopedagogy and Teacher Education

Teachers have a crucial role in promoting environmental education and enhancing public awareness about the environment and nature (World Commission on Environment and Development [WCED], 1987). Because of their profession and position in society, teachers have the power to shape and affect the future generations. Teachers' close relationships with the members of society enable them to raise environmental awareness of people (Swanepoel et al., 2002). Therefore, they have the responsibility to use these opportunities to contribute to the establishment of a sustainable society.

However, research shows that preservice or in-service teachers lack the necessary knowledge to teach about the environment and nature because teacher training programs do not give sufficient attention to environmental education (Spiropoulou et al., 2007). To give an example, Burmeister et al. (2013) found that although preservice teachers supported the inclusion of sustainability education into their teaching practices, they lacked the necessary theoretical understanding of pedagogical approaches to implement it successfully. This indicates the need for a stronger focus on ecological literacy within teacher training programs. Given that English language teachers can reach large and diverse student populations and discuss global issues through language, focusing on preservice English teachers provides a meaningful context for exploring how ecological literacy can be integrated into teaching practices.

The 21st-century education system is expected to put more emphasis on environmental issues to raise citizens who are ecologically literate and take active roles in solving environmental

problems (Tuncer et al., 2009). One of the main reasons why the intended outcomes could not be achieved in an educational program is inadequate teacher training (United Nations Educational, Scientific and Cultural Organization [UNESCO], 1997). Moreover, teachers often have difficulties in integrating ecological literacy into their teaching, which limits students' understanding of the environment and their ability to take responsible actions toward sustainability (Duailibi, 2006).

Knapp (2000) emphasises that "None of the issues facing environmental education today are as important as the lack of quality educator training" (p.34). In this respect, it is evident that teacher training institutions lack an environmental focus that can equip preservice teachers with the necessary skills to help them integrate ecology into their practice. However, ecology should be considered an interdisciplinary topic and included in all subjects. Consequently, it seems proper that all teacher training programs should have ecological considerations.

Relevant literature on preservice teacher education and ecological literacy has indicated some promising results. For instance, Arıkan and Zorba (2024) concluded that PSETs could be encouraged to incorporate sustainable development in their future practice. Şafak (2020) and Tokur (2019) also reported that environmental education initiatives had positive effects on preservice teachers' ecological literacy levels and environmental awareness. In a similar vein, Andersson et al. (2013) and Kılınç (2010) noted that trainings focusing on improving preservice teachers' attitudes towards the environment and the protection of the environment yielded positive results.

Irrespective of the field of education, the extant studies indicated that educational processes consistently enhanced learners' environmental attitudes, awareness, and willingness to protect the environment (e.g., Hsu, 2004; Kyridis et al., 2005; Orbanic & Kovač, 2021; Tarabu Örnek, 2022). Still, literature suggests the existence of a gap, as the majority of studies have been conducted in science-related contexts. Thus, the focus has mostly been on the environmental knowledge rather than the pedagogical integration of the environmental topics.

1.3. English Language Teaching and Ecology

The status of the foreign language has been evolving to serve as a tool for non-linguistic subject studies and as a means of communication in a foreign language environment (Grigaitiene, 2006). Cates and Jacobs (2006) asserts that English teaching must be considered unsuccessful if students remain uninformed about global issues, lack a sense of social responsibility, or use their communication skills for harmful purposes, including international crime, exploitation, oppression, or environmental degradation. Therefore, it is now evident that the traditional assumption that the role of language teachers is confined to teaching a specific language should be questioned. Language teachers should acknowledge the environmental crisis as a pedagogical concern and integrate it into their teaching practices.

English instructors should dedicate significant attention to environmental issues, as these topics can be effectively incorporated into discussions within English language classrooms. English language classrooms offer a meaningful context for addressing environmental concerns, as English language teaching has been increasingly recognised as a platform for integrating sustainability-related themes and fostering environmental awareness among learners (Yu et al., 2024). Language education has a significant potential to contribute to creating awareness among citizens about the importance of environmental protection and encouraging them to take proactive steps individually and as a part of the community (Jacobs & Cates, 1999). If teachers incorporate environmental themes and topics into language education, students can develop a deeper understanding of environmental issues and learn how to engage actively in sustainable practices within their communities. Additionally, it is now widely accepted that teachers can have great effects on their students through their teaching practices (Maley & Peachey, 2017). Therefore, language teachers' roles should not be restricted just to the teaching of language components. Another reason for incorporating environmental issues into English classes is to reassess and broaden the objectives of teaching English as a second or foreign language (Stavreva Veselinovska

& Kirova, 2013). Similarly, Jacob and Cates (1999) suggest that ELT cannot be regarded as a success unless language teachers give specific attention to global issues and try to solve them. As a result, utilising environmental topics in English language instruction has significant advantages for both environmental education and language teaching.

1.4. Current Study

The current study was designed as a case study aiming at transforming PSETs' perspectives on the integration of environmental topics in the language teaching/learning process and improving their understanding of the environment and nature to support environmental sustainability. To accomplish this aim, a process of guided learning for eleven weeks was implemented, which included the teaching and critical discussions of academic articles related to the environment, nature, and the integration of these topics into the language teaching/learning process. During the process, the researchers chose articles related to the environment and nature to be covered. The participants were asked to read that week's article before the session, and the discussions on the related article were conducted during the sessions. The sessions were conducted online due to the devastating earthquake that struck Türkiye and neighbouring regions on February 6, 2023. During this period, education had to be carried out online in the whole country. Thus, it was only possible to conduct this study online. The following research questions were formulated to guide the current study:

RQ 1) How were the preservice ELT teachers' understanding of the environment and nature affected during the guided learning process?

RQ 2) How did the guided learning process change the preservice ELT teachers' perspectives on the integration of environmental topics into the language teaching/learning process?

2. Methods

2.1. Research Design

In the current study, a case study design was adopted since it allows researchers to capture the complexities of the case being investigated and provides an intensive investigation of a group (Yin, 2018). Even though the study involved a guided learning process that was designed to enhance preservice ELT teachers' ecological literacy, it seemed more appropriate to situate it as a case study instead of action research because in action research, researchers and participants work together through cycles of planning, action, observation, and reflection to improve practice and bring about change (Kemmis et al., 2014). On the other hand, this study was conducted as a qualitative case study and focused on exploring participants' experiences and changes that they perceived within a single-bound context (Merriam & Tisdell, 2025; Yin, 2018). Given its focus on in-depth understanding rather than iterative intervention, the current study is best characterized as a qualitative case study rather than action research.

2.2. Participants and Context

The study was conducted in the English Language Teaching Department of a state university. The process was administered within the context of an elective English course (New Approaches in Language Teaching). The course was designed to get students acquainted with the use of various modern teaching approaches. Therefore, it was believed that integrating sustainability education in language teaching could be introduced through this course. Nineteen students were registered for the course, and all of them were invited to participate in the research. Participation was voluntary, and 11 (8 females, 3 males) students agreed to take part in the instructional process and data collection activities. These 11 volunteers constituted the case for the qualitative exploration. A program that consisted of 11 weeks was designed to introduce environmental topics, and teaching of environmental topics within the English teaching context was prepared in advance of the study. The following table presents the weekly schedule of the program:

Table 1

The Topics and the Names of the Articles Used in the Study

Week	Topic	Main Text /Application
1	Introduction	Course introduction
2	Getting to know nature	What Is Nature? (Ducarme, 2021)
3	The relationship between human and nature	The Human Relationship with Nature: Rights of Animals and Plants in The Urban Context (Byrne, 2011) + Student reflections
4	Ecological literacy	Sustainable Living, Ecological Literacy, And the Breath of Life (Capra, 2007)
5	How do different societies approach nature?	Environmental Attitudes and Behaviors Across Cultures (Schultz, 2002)
6	Integrating environmental topics into language teaching	Implementing Environmental Education to Foreign Language Teaching to Young Learners (Gürsoy, 2010)
7	Ecological literacy lesson plan: Demo lesson	Sample lesson plan by the instructor
8	Ecological literacy lesson plan: Demo lesson	Sample lesson plan by the instructor
9	Presentation	Sample lesson plan by the students + Student reflections
10	Presentation	Sample lesson plan by the students
11	Final week	Student interviews

The topics covered during the guided learning were designed in a specific order (Table 1). At first, the focus was on enhancing participants' understanding of the environment and nature. This was followed by exploring the relationship between people and nature. Subsequently, the process focused on environmental sustainability and ecological literacy to deepen the participants' understanding of these concepts. In the next step, it was intended to widen the participants' perspectives of nature and the environment by showing them different views about nature and the environment from various cultures and societies. Finally, the implementation of environmental topics in language education was covered and exemplified through demo lessons to help the participants merge language teaching and ecological literacy. The Flesch-Kincaid Grade Level formula (Flesch, 1948) was utilised to determine the readability levels of the articles chosen to be discussed in the lessons, and it was found that the articles were proper for undergraduate students (DuBay, 2004). The teaching process was designed and facilitated by the first author, while both authors collaboratively conducted the data analysis and contributed to the subsequent stages of manuscript development.

2.3. Data Collection Process and Tools

The data for this study were collected through two primary sources: individual semi-structured interviews and reflection papers prepared by the participants during the learning process. Reflection papers were utilised to monitor the improvements in the participants' perspectives in terms of ecology, the integration of ecological literacy into their teaching practice, and the integration of an environmental course into the teacher training curriculum. After the guided learning process, individual semi-structured interviews were conducted with each participant.

The participants were asked to write two reflection papers about their experiences in the third and ninth weeks of the process. After the course was completed, individual interviews were conducted with four of them who volunteered to participate in the interviews. The reflection papers were collected through e-mail correspondence, while individual interviews were conducted via *Zoom* and recorded for further analysis. The foci of the individual interviews were

(1) their personal experiences about the training, (2) their ideas on teaching ecological literacy within the context of ELT, (3) their pedagogical knowledge improvement during the training, and (4) their perspectives on improving preservice ELT teacher training programs.

2.4. Data Analysis

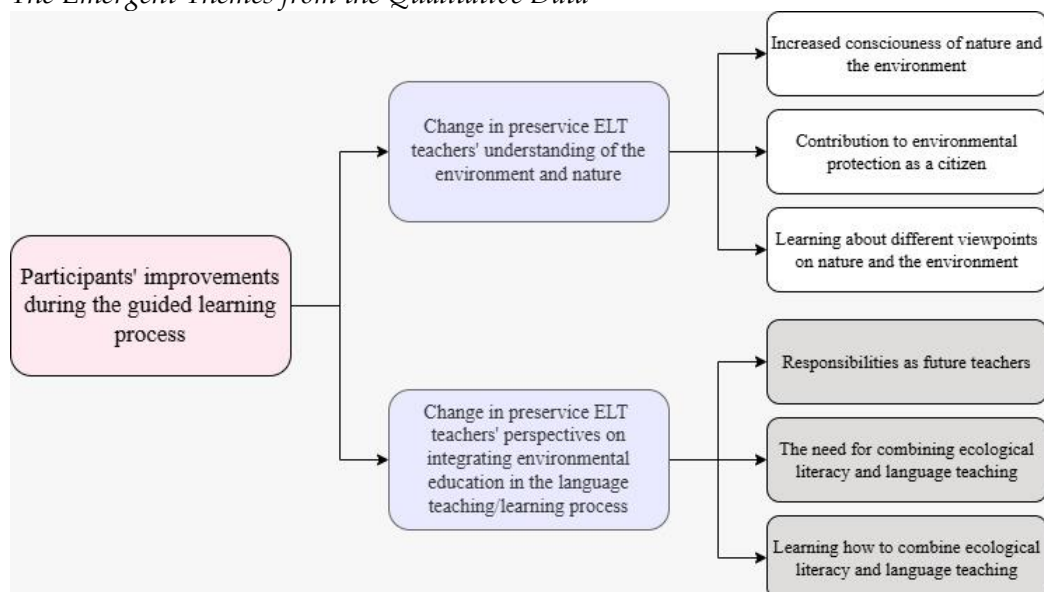
The data were analysed through thematic analysis (Braun & Clarke, 2006), which follows six systematic and successive steps to capture the repeated patterns in the data. Both the interview transcripts and reflection papers were included in the analysis to ensure data triangulation and to capture changes in participants' perspectives throughout the training. First, the interviews were transcribed verbatim, and the researchers familiarized themselves with the data by repeatedly reading the transcripts and reflection papers. Second, the coding process was initiated to obtain the preliminary codes. Third, codes were grouped to reveal the potential themes. Fourth, the themes were checked to see if they were consistent with the initial codes. Fifth, themes were named to have a comprehensive picture of the overall data. Finally, the themes were explained with specific, vivid extracts, and a full data analysis report was produced. The entire analysis process was conducted collaboratively by two researchers to ensure credibility and inter-rater reliability.

3. Results

The qualitative data were gathered through individual semi-structured interviews with the four PSETs who acted as participants in the training process and reflection papers written by the participants during the process. During the qualitative data analysis, the steps identified by Braun and Clarke (2006) were utilised to form the themes.

Figure 1

The Emergent Themes from the Qualitative Data



Ultimately, two main themes and six sub-themes emerged from the qualitative data. The emergent themes are shown in Figure 1. The focus of the qualitative data was to reveal how the guided learning process contributed to the experiences of PSETs and what kinds of experiences they had. Therefore, the emergent themes were shaped around the PSETs' improvements.

3.1. Change in Preservice ELT Teachers' Understanding of the Environment and Nature

During the first weeks of the guided learning, the articles covered focused on enhancing PSETs' understanding of nature and the environment. The thematic analysis revealed that the PSETs showed a significant level of improvement in this aspect. Specifically, the guided learning improved the participants' environmental awareness and understanding in three aspects. Firstly, it increased their environmental consciousness; secondly, it helped them comprehend how they

could contribute to environmental protection as members of the current world; and third, it facilitated them to analyse various perspectives on the environment and nature.

3.1.1. *Increased consciousness of nature and the environment*

The quality of a teacher is mostly linked to their level of mastery of the subject they teach. If they do not have a deep understanding and knowledge of what skills they want to impart to their students, they cannot transfer those skills to their students because teaching is a more complex process than just conveying information. Teachers should also guide their students with their practices and behaviours, and provide feedback on their students' learning. That is why teachers must possess the knowledge of each skill that they teach. In this sense, the analysis showed that the training improved the PSETs' environmental awareness and understanding. In the following excerpt, PSET 3 touched upon how her understanding had been shaped during the process:

I became aware of how little I actually knew about the environment. I decided to learn more about these topics and obtain accurate and trustworthy information. My own consciousness and knowledge increased somewhat after the course. I now try to act more considerately toward the environment. (PSET 3)

As can be seen above, PSET 3 went through a self-realization process. She became aware of how her knowledge and understanding of the environment and nature were limited and tried to modify her behaviours in light of the new knowledge she gained during the process. Similarly, PSET 1 mentioned the effect of the process on her personal improvement in the following excerpt:

I may say that I have come to the realisation that there are a lot of little things about the environment that I was unaware of. I realised how little things may alter the world. This course taught me about significant topics that I had not previously considered or observed, and that even seemingly insignificant actions can have an impact on the environment. (PSET 1)

These two statements, taken together, illustrate that the guided process both enhanced the participants' factual understanding of environmental issues and facilitated a personal re-evaluation of their actions and responsibilities within the school borders. This reflective shift can be associated with the development of ecological literacy among PSETs. Furthermore, it indicates that PSETs' passive awareness of environmental issues and responsibilities as teachers has become more active.

3.1.2. *Contribution to environmental protection as a citizen*

In line with the increased awareness, it was possible to see some positive changes in the participants' understanding of how they contribute to environmental protection. From the participants' statements, it could be inferred that they became more likely to show more eco-friendly behaviours. For example, PSET 1 underlines the value of a healthy environment and nature and how she can contribute to the protection of the environment in the following excerpt:

We need a healthy environment and nature to continue living. Every individual should take responsibility for protecting the environment. I can just protect the environment by avoiding throwing away trash. (PSET 1)

PSET 3 also touches upon a similar topic, emphasising that simple actions like encouraging students to throw their trash into the basket or recycling bin are a way to contribute to environmental protection:

Even if we make sure our students pick up trash and throw it in the basket or recycling bin, I think it is a big step for the environment. (PSET 3)

Based on these excerpts, it can be concluded that the PSETs started to translate their increased environmental awareness into concrete behavioural intentions. Rather than viewing environmental protection as an abstract ideal, they articulated specific and achievable actions. This informs us about the existence of an early shift from awareness to action in PSETs.

3.1.3. Learning about different viewpoints on nature and the environment

In some articles, the focus was on the perspectives of scholars regarding the environment and nature. The analysis showed that these articles contributed to enhancing the participants' perspectives and opinions about nature and the environment. In the following excerpt, we can see that reading about various scholars' views helped PSET 2 construct his own perception of the environment. We can understand from the excerpt that reading about different philosophical perspectives enabled the participant to reconstruct and refine his own understanding of nature:

I have encountered various philosophers' opinions on nature and the environment, like Aristotle's. I learnt from them and made use of their viewpoints. I combined those viewpoints with mine. (PSET 2)

When nature is mentioned, people tend to think of forests, countryside, or more rural areas. However, the cities that we live in are also a part of nature. Some articles were specifically chosen to make the participants comprehend this fact. The participants' statements indicate that they were able to realise that they were already in the very core of nature. In the following excerpt, PSET 4 underlines how her perspective had changed over the course of the process.

You touched upon the coexistence of humans and animals in urban areas during the section on animals. That is, there was a section where we discussed the ways in which nature and city life were combined. It helped me to view this city in a new light. (PSET 4)

As can be seen from the excerpt, the process helped the PSETs challenge their previous beliefs about nature. As a result, they started to recognize urban environments as part of the natural world. This indicates a conceptual shift from a narrow, rural-only view of nature to a more inclusive ecological understanding.

In terms of learning about various perspectives on nature and the environment, the way nature is approached by various cultures and societies was a topic of attention in the study. The following statement shows that the PSETs started to have a deeper understanding of how the relationship between humans and nature was affected by culture and society:

It never occurred to me that a person's level of environmental awareness could differ based on the nation in which they reside. This experience helped me to see it. I was able to observe how humans view nature and the environment in both Eastern and Western countries. (PSET 5)

From the excerpt above, we can conclude that the participants gained a deeper appreciation for the cultural dimensions of human-nature relationships. When we take these excerpts above together, we can see that the process helped PSETs change their understanding of nature and the environment. In other words, we can see that the guided learning has broadened their conceptualizations of nature and the environment.

3.2. Change in Preservice ELT Teachers' Perspectives on Integrating Environmental Education in the Language Teaching/ Learning Process

The educational process had favorable effects on the PSETs' views regarding the integration of environmental education initiatives into the language teaching and learning process. The qualitative analysis revealed that the participants' perspectives on this topic could be grouped under three emergent themes. First, their sense of responsibility for increasing students' ecological awareness was positively influenced during the process. Second, they developed a deeper understanding of the need to combine ecological literacy with language teaching. Finally, they gained insights into possible ways of integrating ecological literacy into language education.

3.2.1. Responsibilities as future teachers

As the PSETs' environmental knowledge and awareness increased, they started to feel more responsible for their behaviours. Additionally, after the PSETs learned how environmental topics could be included in language teaching, they started to feel responsible for the establishment of a sustainable future through teaching about the environment and nature. In the following excerpt, PSET 1 touches upon their responsibilities as teachers:

Teachers serve as examples. We must act appropriately in the school environment if we wish to inspire students to make the correct decisions and transform their behaviour. (PSET 1)

As can be seen in the statement above, in addition to integrating ecological literacy into language teaching, the participants believe that they can trigger transformation in their students by being role models to them and behaving accordingly. This indicates that PSETs have started to internalise her role not only as a language teacher but also as an ecological role model. Similarly, PSET 2 underlines the necessity of including environmental courses in teacher training programs and suggests that all preservice teachers should acquire ecological literacy skills and contribute to environmental sustainability.

I believe that all preservice teacher education programs should include a course focusing on the environment, regardless of department. Without a good understanding of the environment and nature, teachers cannot effectively contribute to environmental protection and teach about the environment. (PSET 2)

This excerpt highlights that PSETs have started to recognize ecological literacy as an essential competency for all teachers, regardless of discipline. PSET 3, on the other hand, touches upon the benefits of taking an environmental course during the teacher training period and stresses the improvement a preservice teacher can make if s/he is educated on the subject. Additionally, supporting other preservice teachers, PSET 3 mentions that the protection of the environment should be ensured by all teachers.

All teachers should do something about protecting the environment. However, teachers cannot teach about it without learning about the environment. For example, if we ask the teachers who have not taken this course, they do not have any idea about this subject. However, those who have taken the course are probably more aware of what they can do about the environment. (PSET 3)

These statements illustrate that the educational process fostered a growing sense of ecological responsibility among the PSETs regarding their professions. They have begun to reflect on their actions in school environment, consider how they can integrate ecological literacy into their teaching, and the importance of environmental courses in teacher education programs.

3.2.2. *The need for combining ecological literacy and language teaching*

An aspect of the training was related to convincing the PSETs of the necessity for merging language teaching and ecological literacy. If they do not believe that there is such a need, they cannot feel obliged to take action as future teachers. In the following excerpt, PSET 2 mentions the changing roles of teachers and how they should address this change as future teachers:

It used to be the responsibility of an English teacher to teach English and a mathematics teacher's responsibility to teach mathematics. It is insufficient for teachers to teach their course subjects in the twenty-first century. I believe that our main responsibility as English teachers should be to teach students about the environment as well as English. (PSET 2)

This statement indicates that PSET 2 acknowledged the shift in the teaching profession in the current century and realized that it involved broader social and ecological responsibilities beyond discipline-specific instruction. Moreover, touching upon a similar issue, PSET 3 comments that English can make use of various topics as content and be used as a tool for promoting other skills in learners:

English should, in my opinion, now be viewed as a tool rather than a target. Thus, when teaching English, we should cover a variety of subjects and topics. (PSET 3)

From the excerpt above, we see that PSET 3 understood that English teaching should not have just a linguistic goal but be used as a medium to promote other skills and values. Therefore, we can state that the process helped participants understand the transformative nature of English language teaching.

PSET 1 also touches upon a similar topic. In the following excerpt, it can be seen that she underlines the need for taking immediate action to protect the environment. Furthermore, she mentions that the current education system does not pay sufficient attention to environmental

topics. Her discontent with the ignorance of the environment and the education system can be understood from the statement below:

The environment is no longer a problem for one group or country. It is now a major global issue that must be addressed right away. However, when I look at the present education program, I see that there is not enough content related to the environment in it. (PSET 1)

Based on these excerpts, we can understand that the guided learning supported a fundamental shift in how the PSETs perceived the role of English language teaching in addressing global ecological challenges. After the process, the participants started to view English not only as a subject to be taught, but as a platform through which environmental awareness and responsibility could be fostered.

3.2.3. *Learning how to combine ecological literacy and language teaching*

Language teachers can use a variety of sources, materials, and techniques to teach English, which makes them quite lucky. However, the integration of the environment and nature into ELT should be done carefully to avoid diverging from the teaching focus. What is expected here is to merge language teaching and ecological literacy in a way that promotes learners' language and ecological literacy skills simultaneously. In order to effectively teach about the environment and nature without losing the focus of the lesson, teachers should possess the pedagogical knowledge of how to combine language teaching and ecological literacy. A part of the process concentrated on this issue. In the following excerpt, PSET 1 put forward an idea about how an environmental topic can be taught within the scope of language teaching based on her experience:

It is simple to incorporate ecological literacy into grammatical instruction. Modals such as should and should not, for instance, can be taught through environmental topics. Although we learnt how to combine language teaching and ecological literacy teaching through the readings in the course, we can make improvements and concentrate on environmental issues while teaching language skills. (PSET 1)

This expert supports that PSETs started to recognize how ecological literacy can be embedded meaningfully within linguistic objectives. In a similar vein, PSET 4 mentioned how she could modify the integration methods that were focused on during the guided learning into her practice regarding the level of the targeted group, so that she can include ecological literacy skills in language teaching:

I learned how to incorporate environmental topics into a class. You demonstrated this to us as a pattern. I can adapt this design to fit my own teaching style. I can modify reading materials according to the profiles of my students. (PSET 4)

Finally, PSET 1 touched upon the fact that environmental topics could be helpful during activities that require learners to participate actively in the learning process. In the following excerpt, we can see how PSET 1 underlines the importance of environmental topics in the use of teaching techniques like classroom discussions and brainstorming:

I may motivate my students to start a discussion in the classroom. We could engage in brainstorming exercises about environmental topics. I can also help them with extracurricular activities. (PSET 1)

When taken together, we can see that these excerpts indicate that, as a result of the guided learning process, the PSETs developed a more sophisticated understanding of how ecological literacy can be integrated into language teaching without losing the focus of the teaching of English. Furthermore, the participants' statements suggest that they started to see environmental topics as meaningful and adaptable content that could enrich the content of language activities. Regarding these shifts in the participants' perspectives, it is reasonable to conclude that this educational process enabled the PSETs to comprehend the basic principles that make the integration of ecological literacy into language pedagogy.

4. Discussion

With reference to the research questions, we initially explored the change in PSETs' perspectives on the environment and nature. After that, we elaborated on the effects of the guided learning on the PSETs' thoughts and opinions about using their enhanced ecological knowledge during the process in their future teaching practice.

The overall analysis indicated that concerning the understanding of the environmental and natural world, the process yielded positive impacts on the PSETs in terms of three aspects, namely, increased consciousness of nature and the environment, contribution to environmental protection as a citizen, and learning about different viewpoints on nature and the environment. While previous studies (e.g., Andersson et al., 2013; Hsu, 2004; Tarabu Örnek, 2022) have also reported favourable effects of environmental education on learners, the present study extends these findings and contributes to the literature by revealing that such awareness can be achieved through discussion-based learning that prioritises dialogue, suggesting that we do not have to be confined to traditional methods to promote ecological literacy. This also indicates that instead of separate environmental courses, we can enhance students' ecological awareness with the help of critical reflection and language-based exploration of environmental topics. Environmental issues are rarely positioned as pedagogical content within English language teaching. As a result, this study bears importance by highlighting this gap and suggesting that Ecopedagogical perspectives into teacher training curricula could help PSETs connect environmental sustainability and language learning more effectively.

The human-nature relationship became a topic of interest in various extant studies (e.g., Şafak, 2020; Tokur, 2019). In the current study, the understanding of the PSETs regarding the human-nature relationship also changed positively following the process. The results indicate that educational processes can help learners redefine their relationships with nature and improve a deeper connection with it, which is a finding that is supported by previous studies (Şafak, 2020; Tokur, 2019). Although these studies highlighted the role of education in this aspect, the current study is different in some aspects because it extends the discussion of the human-nature relationship into the field of English language teacher education. Furthermore, instead of addressing environmental education as a separate domain, this study shows how the human-nature relationship can be explored in language learning. We believe that this particular aspect is valuable because it provides an interdisciplinary approach that connects English language teaching with environmental sustainability and Ecopedagogy.

Regarding the PSETs' perspectives on integrating environmental topics into the language teaching process, the study yielded some promising results. Firstly, our study adopted an Ecopedagogical approach to improve the PSETs' awareness of their potential roles in contributing to the establishment of a sustainable society. In this sense, the guided learning enhanced the participants' perspectives in three aspects, namely, responsibilities as future teachers, learning how to combine ecological literacy and language teaching, and the need for combining ecological literacy and language teaching. In terms of their responsibilities as future teachers, they became more conscious about their responsibilities in environmental protection. They believed that they could inspire their students and transform their behaviour with the help of the influence they had on them. This belief can be supported by other studies (e.g., Kaya, 2019; Kılınç, 2010), where the perspectives of the participants positively changed following the educational process. Additionally, they became more willing to be educated on environmental issues so that they could possess the required knowledge and qualifications to be able to successfully promote students' ecological literacies, which were supported by some extant studies (e.g., Orbančić & Kovač, 2021; Tal, 2010).

The concept of using English as a tool to teach about global issues (Cates & Jacobs, 2006; Jacobs & Cates, 1999) was also supported by the participants in our study. The PSETs seemed to accept the necessity to merge ecological literacy and language teaching to meet the needs and demands of the current era. English teachers have lots of opportunities to cover a variety of topics in class

because English can make use of any world-related material, and it is not subject-specific (Focho, 2010). However, the education provided in schools sometimes does not fully align with the actual circumstances in the world (Suarez-Orozco, 2007). The participants expressed their concerns about this issue by highlighting the insufficiency of current education in touching upon global problems. Consequently, they believed that English could be used to address global problems, putting a new role on language teaching and language teachers.

The lack of qualified educators has been seen as a major problem in raising people with ecological literacy (Knapp, 2000). It is important for teachers to have the pedagogical knowledge that enables them to combine ecological literacy and language teaching. In this respect, the PSETs supported the inclusion of environmental courses into their training programs. Even though adding additional environmental courses to teacher education programs has been suggested in the previous studies (e.g., Kyridis et al., 2005; Tal, 2010), the present study emphasises the importance of extending this perspective into English teacher education programs. Moreover, lacking the necessary ecological and pedagogical knowledge might restrict teachers from merging ecological literacy and language teaching, or they might lose focus and control of the lesson. Regarding this, the guided learning seemed to enhance the participants' pedagogical knowledge, implying that teacher candidates' ability to make use of ecological content in their lessons can be improved. This issue has also been a topic of interest in the literature (Arıkan & Zorba, 2024), and a consistent pattern has been observed, which supports the findings of the present study. This trend yields promising results for the future of environmental sustainability in English language teaching because the merging of content and pedagogy in pedagogical content knowledge is crucial for comprehending the structure of specific subjects, challenges, or concerns (Shulman, 1987). The PSETs were also aware of the influence they had on their students. PSETs believed that environmental education plays a crucial role in fostering students' environmental awareness and viewed teachers as key agents in this process (Türkoğlu, 2019). Consequently, we believe that the present study contributes to the existing body of literature by providing insights into the integration of ecological topics into English language teaching and broadening the scope of language education. The integration of an ecological perspective into English teaching can enhance PSETs' environmental awareness and empower them to use language education to promote sustainability. In this sense, it is important to note that this study addresses the gap between language pedagogy and environmental education and proposes that English classrooms can become transformative spaces for fostering ecological consciousness and a sustainable society.

5. Conclusion and Implications

Adopting an Ecopedagogical approach, this study encouraged PSETs' contribution to a sustainable society and yielded two key implications for ecological literacy in ELT. Firstly, it proved that environmental behaviors and perceptions can be changed through education, which might motivate English teachers to integrate ecological components. Secondly, it showed that PSETs can successfully teach environmental topics without losing subject focus. Therefore, it supports that the English language is a valuable tool for promoting students' environmental awareness and behaviors (Cates & Jacobs, 2006; Jacobs & Cates, 1999).

Given that Ecopedagogy promotes cultural and systemic transformation towards an ecological, sustainable society (Gadotti, 2008), the role of language teachers should go beyond the traditional understanding of teaching learners just language skills. PSETs should understand the interconnectedness and mutual reliance of human beings and the environment, and then should add this understanding to their teaching (UNESCO, 2005). The foundation of ecological literacy is based on the premise that every education should be environmental (Orr, 1992). Moreover, various disciplines can be combined through contextual material and interdependent connections between the topics (Warburton, 2003). The current study demonstrated that English language teachers have the potential and opportunities to extend the scope of teaching English.

It is vital to redesign English language education programs to put more emphasis on environmental topics and include environmental courses to equip PSETs with the necessary pedagogical and content knowledge. Universities need to improve their programs so that all students can have the chance to improve their understanding of the environment and nature (Kaplowitz & Levine, 2005). Education in the 21st century needs to extend its scope to prioritise the environment and environmental sustainability because the survival of humans will not be possible if we continue to exploit nature for the sake of our own. Insufficient teacher training is the leading cause of curriculum failure (UNESCO, 1997). Therefore, educating teachers of tomorrow to contribute to the establishment of sustainable societies should be the primary action that needs to be taken.

To sum up, the current study is valuable for the teaching of ecological literacy and ELT, as well as the education of PSETs. This study showed that PSETs, adopting the Ecopedagogical approach, can contribute to the establishment of a sustainable society. The results indicated that individuals' behaviours, actions, and perspectives can be reshaped in a positive way through education. However, it should be considered that the study was conducted with a limited sample and in an online environment. In this respect, we believe that more comprehensive studies should be conducted. Additionally, English language teacher education programs should put more emphasis on environmental courses to prepare teachers for teaching ecological literacy. Educational policies also need to be revised to include ecological literacy. Finally, it should be remembered that education in the 21st century should prioritise the protection of the environment and environmental sustainability because the survival of humanity highly depends on living in harmony with nature.

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Data availability: The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

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