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Fostering environmental consciousness through philology education in Vietnam

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ABSTRACT

In the context of the global ecological crisis and climate change, educating the young generation about environmental protection has become an urgent task for the education sector. This study focuses on examining the current situation of environmental education (EE) for students in Vietnam through the subject of Philology a subject with significant potential to nurture emotions and foster ecological thinking. Based on the EE theoretical framework proposed by UNESCO, which includes five core objectives (Awareness, Knowledge, Attitudes, Skills, Participation), the research team employed a methodology combining theoretical research, practical investigation, and statistical analysis. Data were collected via a questionnaire survey of 55 teachers and 445 students in three northern mountainous provinces of Vietnam: Thai Nguyen, Bac Kan, and Lang Son. The results indicated that both teachers and students recognize the importance of building a green environment and integrating environmental protection content into Philology. However, barriers such as a lack of teaching materials, limited program duration, and low learner interest persist. Based on these findings, the study proposes an approach model for integrating environmental education into Philology, which includes restructuring lesson content around ecological critical thinking, designing diverse and creative learning tasks, organizing community-oriented experiential activities, and developing teacher training programs. The research findings contribute to enhancing the theoretical and practical foundations necessary for promoting education for sustainable development in Vietnamese general schools.

Contribution/Originality: This study is the first to systematically integrate Philology education with environmental education in the context of Vietnamese secondary and high schools. Its originality lies in affirming the role of Philology as a soft but effective channel for nurturing ecological consciousness, shaping students' sustainable behaviors, and offering practical pedagogical models to enhance classroom quality and teacher training.

1. INTRODUCTION

1.1. Background and Rationale for the Study

Entering the 21st century, humanity faces existential challenges such as climate change, biodiversity loss, environmental pollution, and depletion of natural resources. These issues not only threaten the current quality of life but also significantly impact the future of subsequent generations (Ardoin, Bowers, & Gaillard, 2020; United Nations Secretary-General, 2021). In this situation, environmental education (EE) is considered an essential strategy to raise

awareness, change attitudes, and promote responsible behavior towards the living environment (UNESCO - UNEP, 1978). The UNESCO-UNEP (1978) established five core objectives of environmental education, including awareness, knowledge, attitudes, skills, and participation. These objectives not only guide teaching content but also suggest a multidimensional approach in lesson design, especially suitable for the characteristics of philology, where people and life are placed at the center.

In Vietnam, environmental education has been integrated into many subjects such as Natural Sciences, Biology, Geography, etc. However, a potential "soft education channel" has not been fully exploited - that is, Philology. With its strengths in expressive language, the ability to evoke the depth of the soul, and humanistic values, Philology can become an effective tool for ecological education, contributing to the formation of love for nature, ecological awareness, and social responsibility (Buell, 2009; UNESCO - UNEP, 1978). However, the current situation of teaching Philology in Vietnamese schools still faces many obstacles. For example, teachers lack specialized materials, time is limited, students are not interested in environmental protection activities, and teaching methods are still theoretical, lacking practical experience. These challenges require empirical surveys to assess the readiness, effectiveness, and model of integrating environmental education into the Philology subject towards developing school ecological capacity.

1.2. Research Questions and Objectives

From the above context, this study raises the central question:

To what extent does the integration of environmental education (EE) into Philology enhance students' consciousness, attitudes, and ecological behaviors?

This study hypothesizes that integrating EE into Philology will generate positive impacts, foster stronger ecological thinking, and promote responsible behaviors among students.

To answer this question, the study aims at three main objectives:

- To survey the current consciousness and practices of teachers and students regarding building a green school environment through philology.
- To assess the effectiveness of integrating EE into Philology teaching in **some schools** in the mountainous areas of Northern Vietnam.
- To propose feasible and practical integration models, thereby supporting teachers and improving the quality of environmental education through philology.

Through this, the study hopes to affirm the role of Philology in education for sustainable development, where Philology is not only an aesthetic journey but also a pathway to nurturing ecological citizens - students who are aware of and responsible for the environment and the future of their community.

2. LITERATURE REVIEW

2.1. Theoretical Framework of Environmental Education (EE)

Environmental Education (EE) was defined in the 1977 Tbilisi Declaration as a process that helps people develop awareness, understanding, attitudes, skills, and appropriate behaviors to actively participate in the protection and improvement of the living environment (UNESCO - UNEP, 1978).

EE is not simply providing information but also an educational strategy to foster sustainable behavior through responsible social action.

Figure 1. The Tbilisi Declaration by UNESCO - UNEP (1978).

From Figure 1, it can be seen that the Tbilisi Declaration has outlined five core objectives of EE:

Awareness: Raising awareness of environmental issues at all levels.

Knowledge: Providing basic knowledge about ecosystems and the relationship between humans and the environment.

Attitudes: Developing positive, responsible attitudes towards the environment.

Skills: Developing skills in thinking and solving environmental problems.

Participation: Encouraging active participation in environmental protection activities (UNESCO - UNEP, 1978).

This theoretical framework has become the foundation for many sustainable development education models worldwide. When integrated into the curriculum, especially in Philology, EE not only provides knowledge but also contributes to building ecological awareness and responsibility. "Green Environment" is understood as a living environment system that is planned, managed, and maintained with the goal of ensuring the sustainable development of ecological factors while minimizing negative impacts on nature, humans, and society (United Nations Environment Programme, 2019).

According to Steg and Vlek (2009), a sustainable green environment depends directly on promoting environmentally friendly behaviors, through which people both limit harm and proactively bring benefits to the ecosystem (Steg & Vlek, 2009). Educating students about green environmental awareness focuses on integrating environmental education content into core subjects, diversifying through extracurricular activities and community projects. The goal is to help students not only "know" but also "feel" and "act" responsibly for the green environment (Sterling, 2001).

2.2. Related Studies

Worldwide, EE has been implemented in many fields, in which Philology has emerged as an emotional and effective tool to convey ecological messages. Ecocriticism, an approach to Philology that emerged in the late 20th century, views Philology as a means to analyze the relationship between humans and the environment (Buell, 2009; Glotfelty & Fromm, 1996). This approach holds that philology not only reflects the natural world but also shapes human attitudes and behaviors towards nature.

Many researchers have clarified the role of philology in environmental education. Heise (2015) emphasized that philology has the ability to integrate environmental science into aesthetic emotions to create profound changes in perception (Heise, 2015). Chae (2019) studied Korean Philology and came to the conclusion that ecological philology helps build a national ecological identity, especially in the postmodern context (Chae, 2019). At the 2018 PyeongChang Humanities Forum, more than 60 writers from many countries agreed that Philology is the "voice of ecological conscience". Poet Koike Masayo (Japan) affirmed that people need to "plant trees in their souls". Writer Angelo Lacuesta (Philippines) emphasized that every country is contributing to environmental damage, so every writer needs to speak up. Montejo (USA) recognized that writers can warn of ecological risks through imagination and sensitivity of literary language (Nguyễn, 2018).

In terms of works, many world literary masterpieces have clearly demonstrated ecological awareness, such as *One Hundred Years of Solitude* (G. Márquez), *The Kingdom of Earth* (A. Carpentier), *Life of Pi* (Y. Martel), *Salmon* (Ahn Do-Hyun)... showing that philology can play a key role in building an "ecological self" and promoting sustainable behavior. Julia L. Frengs's article examines French-style Oceanian feminist literature through an ecofeminist lens (Frengs, 2020). In Asia, many scholars have developed ecological criticism theory as a foundation for integrated environmental philology education (Trần, 2020). In Vietnam, the research of the group of authors (Thảo et al., 2013) mentioned the analysis of awareness, knowledge, attitudes, and actions about the environment in secondary and high school students in Ninh Kieu district, Can Tho city (Nguyễn, Nguyễn, & Vũ, 2023; Thảo et al., 2013) studied the model and framework for evaluating the effectiveness of environmental protection activities in general schools (Dương, 2017; Nguyễn, Nguyễn, & Vũ, 2023) studied the management of environmental protection education activities in high schools in Cau Ke district, Tra Vinh province (Dương, 2017) several groups of authors - including (Bùi, 2019; Bùi & Phạm, 2022; Trần & Lê, 2024) have studied Vietnamese literature from the lens of ecocriticism … but these studies are still limited in scope and depth, not mentioning the issue of environmental education in teaching Philology in schools in Vietnam.

2.3. Research Gap

From the theoretical overview and published works, it can be affirmed that environmental education through Philology is a potential approach, especially in the context of globalization and ecological crisis. However, empirical studies in Vietnam, especially surveys of perceptions and behaviors of teachers and students in integrating EE into Philology, are still seriously lacking (Nguyễn & Bùi, 2023) while teaching Philology from an ecocritical perspective remains a "blank area" in pedagogical research, there have been few works on developing a model for integrating EE into the teaching of modern Vietnamese Philology. This topic is highly relevant to students and encompasses many natural and humanistic elements.

Therefore, this study aims to:

- Supplement empirical evidence from surveys of teachers and students in localities.
- Propose an effective and feasible model of teaching Philology with the integration of EE.
- Contribute to expanding the scope of applying eco-critical theory in Vietnamese general education.

3. METHODOLOGY

3.1. Participants

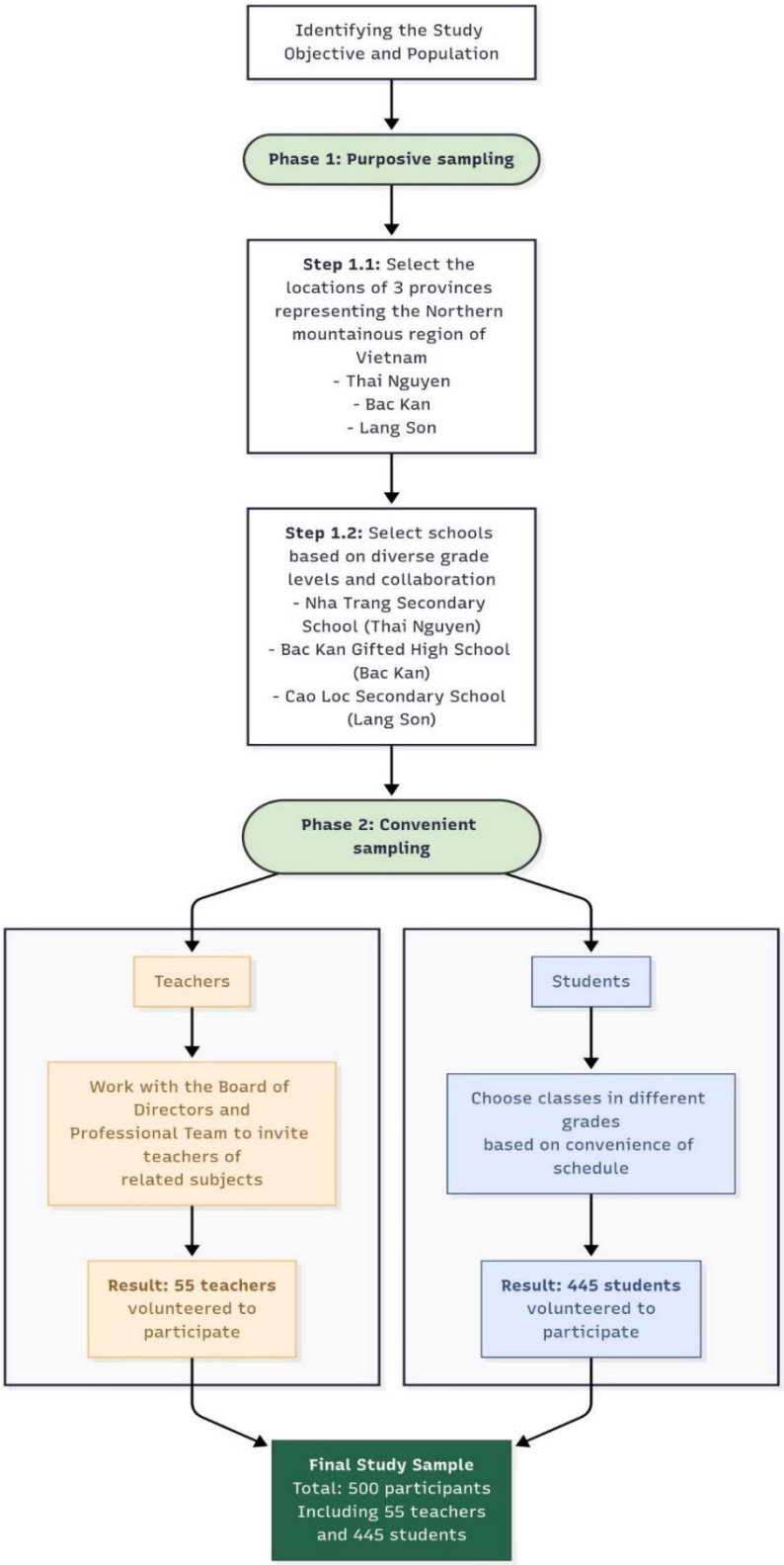

Figure 2. The process of participant selection.

The study was conducted on a total of 500 participants, including 55 teachers and 445 students from three general education institutions in three mountainous provinces in the north of Vietnam, including two secondary schools and

one high school. As shown in Figure 2, in the group of teachers, the gender ratio is 94.5% female and 5.5% male. They mainly teach the subjects of Philology, History - Geography, Civics, Natural Sciences, and Biology, with an average working experience of 15.6 years. The group of students includes secondary and high school students, in which the proportion of females is 62.9% and males is 37.1%. Sample selection was carried out using the convenience sampling method, based on the willingness to participate in the survey of schools, teachers, and students in the three research locations.

3.2. Research Procedure

The research process was implemented in the following steps:

- *Preparation:* Building a survey tool system, including two sets of questionnaires specifically for teachers and students. The questionnaires, which include both quantitative and qualitative questions, were designed to assess the level of awareness, attitudes, and behaviors related to EE, while also evaluating the integration of EE content in Philology.
- *Validation of the tool:* Before being widely deployed, the questionnaires were adjusted through expert consultation and reliability testing using Cronbach's Alpha coefficient (teachers: $\alpha = 0.858$; students: $\alpha = 0.816$), achieving a high level of reliability according to social research standards (Mallery & George, 2000).
- *Survey implementation:* The questionnaires were distributed directly to teachers and students at three schools. Data collection was conducted from December 2024 to January 2025 in coordination with the research team, teachers, and students at three schools.
- *Data processing and analysis:* Survey data were encoded and entered into SPSS 27 software for descriptive statistical analysis, normal distribution testing (Shapiro-Wilk), and non-parametric testing (Kruskal-Wallis), thereby determining significant differences between groups by locality.
- *Results synthesis:* Survey results were analyzed through specific tables, thereby drawing conclusions about the current situation and the potential for integrating environmental education in Philology.

3.3. Research Methods

Theoretical analysis: Based on the theoretical basis of environmental education according to the Tbilisi Declaration (UNESCO - UNEP, 1978), ecological criticism in Philology (Buell, 2009; Glotfelty & Fromm, 1996), and the sustainable development education model.

Survey Research: Using questionnaires to collect quantitative and qualitative data from teachers and students, focusing on variables such as environmental awareness, level of interest in EE, teaching practices/integration of EE content, difficulties, and proposed solutions.

Statistical analysis: Descriptive statistical tools (mean, SD), internal reliability test (Cronbach's Alpha), test of differences between groups (Kruskal-Wallis Test), and normal distribution test (Shapiro-Wilk Test) are applied to ensure accuracy, objectivity, and scientific validity in data processing.

This approach not only helps to describe the current situation but also highlights trends, differences, and relationships between research variables in the context of general education in Vietnam.

4. RESULTS

4.1. Demographic Information

The study collected data from 55 teachers and 445 students in three mountainous provinces in northern Vietnam (Thai Nguyen, Bac Kan, and Lang Son).

Table 1. Information of surveyed teachers.

	Gender		School			Subject			Years of working
	Male	Female	Nha Trang Secondary School (Thai Nguyen)	Bac Kan Gifted High School (Bac Kan)	Cao Loc Secondary School (Lang Son)	Philology	History, Geography, Civics	Natural Science, Biology	
Quantity (Number of people)	03	52	29	19	7	30	9	16	
Percentage (%)	5.5	94.5	52.7	34.5	12.7	54.5	16.4	29.1	
Minimum									1
Maximum									34
Mean									15.6
Standard deviation									9.038

Table 2. Information of surveyed students.

	Gender		School			Class	
	Male	Female	Nha Trang Secondary School (Thai Nguyen)	Bac Kan Gifted High School (Bac Kan)	Cao Loc Secondary School (Lang Son)	Secondary School	High School
Quantity (Number of people)	165	280	215	102	128	343	102
Percentage (%)	37.1	62.9	48.3	22.9	28.8	77.1	22.9

According to the data in Table 1 and Table 2, this study was conducted on a sample of 500 participants, including 55 teachers and 445 students from three schools in the northern mountainous provinces of Vietnam. Selecting a demographically diverse sample was key to ensuring representativeness and providing a solid data foundation for subsequent in-depth comparative analysis. The sample of teachers (N=55) was predominantly female (94.5%), reflecting the general gender composition of the Vietnamese education sector. Teachers came from three different work units, including Nha Trang Secondary School (Thai Nguyen), Bac Kan Gifted High School (Bac Kan), and Cao Loc Secondary School (Lang Son). This diversity was not limited to the location but also reflected in teaching expertise, with the participation of teachers of Philology (54.5%), other social sciences (16.4%), and natural sciences (29.1%). In addition, with an average working experience of 15.6 years and a wide range from 1 to 34 years, the sample of teachers allows the study to examine perspectives on environmental education (EE) from a variety of professional and senior perspectives. This is particularly valuable in assessing the unique role of Philology compared to other subjects in integrating EE content. Regarding students, the survey sample included 445 students, with 62.9% being female and 37.1% being male. The sample was distributed across both levels of education, with secondary school students accounting for 77.1% and high school students accounting for 22.9%. Collecting data from both levels of education and from different types of schools, including normal and gifted schools, allows the study to analyze the development of environmental awareness, attitudes, and behaviors by age as well as compare the effects of different educational environments. Overall, the diverse sample structure in terms of geography, educational level, school type, and participant expertise provided a rich database, allowing for in-depth analysis and multidimensional matching, thereby enhancing the reliability and applicability of the research results.

4.2. Reliability of the Data

Table 3. Results of the reliability test of the scale (Teachers and students).

Results of the reliability test of the scale	Reliability (Cronbach's alpha)	Number of variables
Teachers	0.858	41
Students	0.816	42

To evaluate the internal consistency of the research instruments, Cronbach's Alpha coefficient was calculated. As shown in Table 3, the teacher questionnaire (41 items) achieved a reliability coefficient of $\alpha = 0.858$, while the student questionnaire (42 items) recorded $\alpha = 0.816$. According to the standard of Mallery and George (2000) coefficient $\alpha \geq 0.80$ indicates that the scale demonstrates a very good level of reliability, ensuring accurate measurement of environmental education components.

4.3. Research Results According to Environmental Education Theory

Refer to the Appendix 1, 2, 3, 4.

4.3.1. Awareness

The survey results indicate that both teachers and students possess a relatively high level of awareness regarding environmental issues within the school context. Specifically, when asked about their concern for environmental issues, teachers had an average score of 3.71 (SD = 0.458), while students scored an average of 3.45 (SD = 0.566) on a 4-point scale. This reflects the sensitivity and genuine concern of both groups towards environmental phenomena.

Notably, 51% of students identified littering as the most common negative manifestation, followed by 40.7% mentioning unsanitary classrooms and 33.5% reflecting the behavior of not taking care of trees. These results demonstrate not only the ability to observe but also reflect the students' ability to reflect, an important element in the "Awareness" component that EE aims for (UNESCO - UNEP, 1978). A clear awareness of the environmental conditions in the learning space itself is a necessary prerequisite to promote educational action.

4.3.2. Knowledge

While awareness plays a role in directing attention, knowledge is the foundation for effective action. The study noted that 92.7% of teachers and 89.7% of students chose the definition of "*a green environment is a living environment with sustainable development and ecological balance*," reflecting a fairly accurate understanding of the core concept of environmental education.

However, when assessing the level of awareness and access to EE content in the curriculum, the average score of teachers was 3.15 (SD = 0.591), while that of students was 2.91 (SD = 0.830). The gap between the ideal concept and the practical approach to knowledge shows that the gap between general awareness and the level of absorption of environmental education content in the curriculum is still quite large. This is consistent with the observation of (Tilbury, 1995) who stated that the integration of EE into subjects is often incomplete, unsystematic and lacking in depth.

In addition, only 44.5% of students confirmed that they had studied environmental elements in Philology a rather modest number compared to the potential of the subject in nurturing ecological emotions and thinking. This result indicates that environmental knowledge content has not been integrated evenly into the program and has not been clearly identified by learners.

4.3.3. Attitudes

The "Attitudes" objective in EE aims to foster respect for the environment and promote sustainable lifestyles. Survey data indicate that both teachers and students hold positive and proactive attitudes towards environmental education. Specifically, 94.5% of teachers agree that EE should be integrated into the general education program; the perception of this necessity has an average score of 3.60 points (SD = 0.494). Additionally, teachers show a high willingness to contribute ideas to environmental education activities (M = 3.49; SD = 0.573).

On the student side, the average score for assessing the necessity of integrating EE into teaching is 3.52 (SD = 0.575), and the level of necessity of building a green environment reaches 3.76 (SD = 0.457), a level close to absolute. In particular, 80.4% of students expressed a desire to participate in learning through practical experiences. This clearly reflects a positive attitude and willingness to engage in environmental education activities, prerequisites for EE to be effective in the long term (Stephen Gough, 2003; UNESCO - UNEP, 1978).

4.3.4. Skills

EE skills include not only technical operations but also the ability to implement environmental actions in a practical context. The survey results show that teachers have an average score of 3.45 (SD = 0.899) regarding their level of organizing or participating in EE activities. Notably, 90.9% of teachers reported participating in learning projects related to the environment, and 89.1% had guided volunteer activities and environmental clean-up efforts.

On the student side, the average level of participation in EE activities at school was 3.45 (SD = 0.616). Of these, 88.8% of students participated in environmental cleaning, 62.0% participated in propaganda, and 53.7% engaged in creative activities such as making recycled products or drawing propaganda pictures.

These figures show that students not only know but also act, demonstrating the ability to apply EE in the most familiar and immediate context school. This result reinforces Sterling's (2001) view that effective EE is EE that creates opportunities for learners to "act" and "feel" that they have a positive influence (Sterling, 2001).

4.3.5. Participation

The final element, "Participation," is the highest level of environmental education: learners voluntarily contribute, create, and spread ecological awareness. In this study, 74.5% of teachers had organized creative experiential activities related to the environment; 69.1% had developed or implemented a program to integrate EE into the subject.

From the students' side, the desire to participate in learning EE through practical experience accounted for 80.4%, while 63.4% affirmed their willingness to participate in designing or contributing to the development of a program to integrate EE into the subject. These results show that proactiveness and the spirit of ecological citizenship are gradually being formed in general schools in line with the highest goal of EE that Tbilisi has set (UNESCO - UNEP, 1978).

4.4. Statistical Analysis: Normal Distribution Test and Non-Parametric Test

4.4.1. Normal Distribution Test (Shapiro-Wilk Test)

To select the appropriate statistical analysis method, the research team performed a normal distribution test on the survey data.

The results showed that important variables such as awareness, understanding, attitude, and behavior regarding environmental education of students and teachers all had Sig. < 0.05 in the Shapiro-Wilk test. This indicates that the distribution of the variables does not follow a normal distribution, so the use of non-parametric tests is necessary to ensure accuracy and objectivity when analyzing relationships between groups of subjects.

From an EE theory perspective, this result reflects a common reality in environmental education. Accordingly, the level of access to and engagement with EE content varies across individuals and groups, depending on location, learning environment, and level of curriculum integration. The non-normal distribution also reflects the diverse and fragmented nature of ecological awareness, which (Sterling, 2001) calls "learner ecological difference" in different educational contexts (Sterling, 2001).

Table 4. Normal distribution test (Teachers).

	Shapiro-Wilk		
	Statistic	**df**	**Sig.**
Concerns about environmental issues	0.570	55	0.000
The current situation of education on environmental protection awareness	0.754	55	0.000
Participation in training on environmental education	0.851	55	0.000
The level of organization/participation in environmental activities	0.652	55	0.000
The necessity of integrating environmental education content into teaching	0.622	55	0.000
The frequency of integrating content on protecting and building a green environment into lectures	0.680	55	0.000
The level of willingness to contribute ideas for the environmental education program	0.710	55	0.000

Table 5. Normal Distribution Test (students).

	Shapiro-Wilk		
	Statistic	**df**	**Sig.**
Concerns about environmental issues	0.715	444	0.000
The current situation of education on environmental protection awareness	0.854	444	0.000
The level of participation in environmental protection activities in schools	0.725	444	0.000
The necessity of building a green environment	0.532	444	0.000
The necessity of integrating environmental education content into teaching	0.701	444	0.000

Note: *Normality check based on 444 valid cases (excluding 1 missing case).

4.4.2. Non-Parametric Test (Kruskal-Wallis Test)

To test for differences between groups (by school/locality, etc.), the research team used the *Kruskal-Wallis test*, a non-parametric statistical method suitable for non-normally distributed data.

Table 6. Non-parametric tests (teachers).

Name of variables	Thai Nguyen		Bac Kan		Lang Son		Type of test
	Mean	Mean Rank	Mean	Mean Rank	Mean	Mean Rank	P-value
Concerns for environmental issues	3.62	25.57	3.84	31.66	3.71	28.14	Kruskal-Wallis Test 0.262
The current situation of education on environmental protection awareness	2.97	23.84	3.42	34.82	3.14	28.07	Kruskal-Wallis Test 0.034
Participation in environmental education training	1.90	19.84	3.42	40.79	2.43	27.07	Kruskal-Wallis Test 0.000
The level of organization/participation in environmental activities	3.41	26.83	3.63	31.13	3.14	24.36	Kruskal-Wallis Test 0.406
The necessity of integrating environmental education content into teaching	3.55	26.67	3.68	30.32	3.57	27.21	Kruskal-Wallis Test 0.653
The frequency of integrating content on protecting and building a green environment into lectures	3.45	25.62	3.63	30.05	3.71	32.29	Kruskal-Wallis Test 0.349
The level of willingness to contribute ideas for the environmental education program	3.45	26.84	3.58	30.55	3.43	25.86	Kruskal-Wallis Test 0.611

Table 7. Non-parametric tests (students).

Name of variables	Thai Nguyen		Bac Kan		Lang Son		Type of test
	Mean	Mean Rank	Mean	Mean Rank	Mean	Mean Rank	P-value
Concerns about environmental issues	3.41	213.59	3.53	240.48	3.45	224.88	Kruskal-Wallis Test 0.139
The current situation of education on environmental protection awareness	2.90	218.18	3.06	244.21	2.80	212.42	Kruskal-Wallis Test 0.104
The level of participation in environmental protection activities in schools	3.28	190.89	3.77	284.42	3.48	228.00	Kruskal-Wallis Test 0.000
The necessity of building a green environment	3.62	193.03	3.91	255.72	3.88	247.27	Kruskal-Wallis Test 0.000
The necessity of integrating environmental education content into teaching	3.46	208.01	3.72	263.21	3.47	216.14	Kruskal-Wallis Test 0.000

The data in the Tables 4,5,6,7 showed that: There was a statistically significant difference ($p < 0.05$) between students in terms of awareness and attitude towards environmental education. Specifically, students at Nha Trang Secondary School, Thai Nguyen, had significantly higher average levels of both awareness (M = 3.61) and attitude (M = 3.79) than those at the other two schools. However, there was no significant difference in action skills or level of participation in environmental activities, suggesting that these factors may be influenced by school policies, conditions for organizing activities, or the level of support from teachers.

From the perspective of EE theory, this reflects the goal of personalization and contextualization of environmental education. UNESCO - UNEP (1978) emphasized that EE objectives - from awareness to participation

- cannot be separated from the specific socio-cultural environment of the learner. Therefore, the differences between schools are not "deviant," but rather a natural manifestation of the process of internalizing EE in each educational environment. In addition, the similarity in skill levels and participation between groups also confirms an important principle in EE: "*environmental action can overcome the cognitive gap if there is an opportunity for practical practice*" (Stephen Gough, 2003). This opens up the suggestion of enhancing experiential learning models, community activities, and green projects as strategies to neutralize the gap in theoretical knowledge.

The results from the statistical test have provided important bases for a deeper understanding of the operation of the five objectives of environmental education (UNESCO - UNEP, 1978) in the context of general education in the mountainous areas of Northern Vietnam, the non-normal distribution of the data indicates that the level of environmental education reception among students and teachers remains differentiated by region, teaching conditions, and access to integrated programs.

The statistically significant differences in awareness and attitudes among students of the schools confirm the role of the learning environment and school policies in building a "school ecological culture". Schools that organize many experiential activities, green projects, and community connections often have higher results in the EE elements. This is an important suggestion for replicating effective environmental education models not only stopping at lecture content but also needing to be designed as a comprehensive educational ecosystem, where students can live, feel, and act with nature, meet the requirements of the current general education program in Vietnam (Ministry of Education and Training of Vietnam, 2018).

On the contrary, the similarity in skills and participation behaviors between groups shows that, when students have the opportunity to practice, despite different initial cognitive conditions, they can still achieve a level of participation and positive environmental action. This confirms the superiority of teaching methods based on experiences, projects, and problem solving, such as the global citizenship-oriented learning models recommended by.

From these results, some recommendations can be drawn:

- It is necessary to develop a coherent program to integrate EE into Philology, with a clear orientation aligned with the five Tbilisi objectives.
- It is necessary to strengthen experiential learning activities both inside and outside the classroom, encourage students to participate in green projects, and promote ecologically creative products.
- There is a need for in-depth training for teachers on ecocriticism and EE-integrated teaching methods, helping them to proactively design lessons rich in humanistic values and environmental responsibility.

Thus, statistical analysis not only provides scientific evidence for the current status of EE in Philology but also serves as a basis for proposing an adaptive environmental education model, arousing ecological awareness, forming sustainable living skills, and nurturing green hearts in Vietnamese students.

5. DISCUSSION

5.1. Interpretation of Research Results

The research results indicate that both teachers and students in three schools in the mountainous region of Northern Vietnam have relatively positive perceptions of environmental education, particularly regarding the objectives of knowledge, attitudes, and skills. However, a significant gap remains between awareness and in-depth knowledge, as well as between awareness and the ability to actively participate in integrated environmental activities in Philology. Qualitative data reveal that teachers tend to possess good integrated thinking, but students primarily stop at identifying environmental protection behaviors, lack depth in ecological thinking, and have not clearly developed the ability to act independently.

The unevenness between student groups and schools also reflects the dispersion of school ecological competence a common reality in educational contexts that are diverse in geography and conditions for implementing educational

programs (Sterling, 2001). These gaps indicate that environmental education remains "event-based" and needs to be restructured into an integrated system throughout the subject.

5.2. Comparison with Previous Studies

The findings of the current study are similar to both international and domestic studies on environmental education (EE), especially regarding the integration of ecological thinking into the teaching of literature.

Heise (2015) mentioned the concept of "eco-gap" – the gap between the ecological values that learners demonstrate and their actual behavior. This phenomenon shows that environmental awareness, even at a high level, is not enough to promote practical action if not supported by pedagogical strategies that help learners develop critical thinking and ecological action capacity. According to Heise (2015), environmental literature should not only evoke empathy with nature but also aim to enhance reflective awareness and action capacity to transform awareness into practical behavior (Heise, 2015). Alette (2019) found that reading such ecological writings can help readers change their perceptions and appreciation of non-human creatures and the non-human world (Alette, 2019).

In Korea, Chae's (2019) study on the application of ecocriticism in literature teaching also showed that students often have difficulty accessing the ecological depth of a work without a clear conceptual framework. This suggests that without appropriate "academic guidance," the potential for environmental education in literature will be left untapped (Chae, 2019).

In Vietnam, Tran Thanh Thao emphasized: "*Students have a positive attitude towards the environment and have taken specific actions in interacting with the community to protect the environment. However, they believe that their environmental action skills are still low and need to be further developed through in-school and extracurricular educational activities*" (Thảo et al., 2013). This shows the need for a systematic environmental education model that focuses on skills and actions.

Compared to international environmental education models, which are interdisciplinary, integrated, and competency-based, environmental education in Vietnam remains fragmented and lacks an effective implementation mechanism, especially in emotionally-oriented subjects such as Philology. The absence of a clear policy framework, specialized teacher training programs, and supporting materials means that the potential of Philology in environmental education has not been fully exploited.

The above comparisons reveal an important common point. Accordingly, positive environmental emotions are necessary but not sufficient. For environmental education to be effective, it is necessary to closely link emotions, critical thinking, and practical action. The model of integrating ecocriticism into teaching Philology that this study proposes is an approach to narrow that gap and move towards the goal of education for sustainable development.

6. CONCLUSION

6.1. Key Conclusions and Implications

This study has shown that integrating environmental education into Philology can create positive changes in the awareness, attitudes, and behaviors of students towards the environment. Through a practical survey in three northern mountainous provinces and based on EE theory, the study has clarified the gap between awareness and action and emphasized the role of teachers in guiding students to approach EE in a profound and sustainable way. The results show that Philology, with its emotional and life-related characteristics, has great potential in forming ecological citizens. At the academic level, this study contributes to broadening the theoretical and practical discourse on EE in general education by linking ecocriticism, EE theory, and teaching practice. In doing so, it affirms the role of Philology as a meaningful pathway toward education for sustainable development.

6.2. Recommendations

Future research should evaluate the effectiveness and feasibility of the ecocritical integrated teaching model by measuring students' changes across the five core components of environmental education awareness, knowledge,

attitudes, skills, and participation before and after implementation. Such empirical studies will provide evidence of the model's pedagogical value and its potential to foster ecological citizenship among learners.

Moreover, this integrated approach could be adapted for other school subjects such as Geography, Biology, or Civic Education, contributing to a more holistic and interdisciplinary model of green education in the Vietnamese secondary school system.

6.3. Limitations

Although the study collected data from multiple sources and employed a mixed method, some limitations still exist. First, the survey scope was limited to three northern mountainous provinces, which did not fully reflect the regional diversity across the country. Second, the assessment of the impact of EE in Philology focused only on perceptions and opinions and did not measure actual behavioral changes in the long term. Third, the use of self-assessment questionnaires may be influenced by social desirability bias, causing respondents to tend to select the "correct" option rather than reflect their true feelings or behaviors.

Therefore, future research needs to expand the geographical scope, include classroom observations, analyze student products, and conduct longitudinal studies to track changes in cognition and behavior over time.

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Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
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Appendices

Appendix 1. Average rating of responses (Teachers).

Variable name	Total sample	Minimum	Maximum	Mean	Std. Deviation
Concern for environmental issues	55	3	4	3.71	0.458
Current status of environmental protection education	55	2	4	3.15	0.591
Participated in training on environmental education	55	1	4	2.49	1.136
Level of organization/Participation in environmental activities	55	1	4	3.45	0.899
The necessity of integrating environmental education content into teaching	55	3	4	3.60	0.494
Frequency of integrating environmental protection and construction content into lectures	55	2	4	3.55	0.538
Willingness to contribute ideas to the environmental education program	55	2	4	3.49	0.573

Appendix 2. Average rating of responses (Students).

Variable name	Total sample	Minimum	Maximum	Mean	Std. deviation
Level of concern for environmental issues	445	2	4	3.45	0.566
Current status of environmental protection education	444	1	4	2.91	0.830
Level of participation in environmental protection activities in schools	445	1	4	3.45	0. 616
The necessity of building a green environment	445	1	4	3.76	0. 457
The necessity of integrating environmental education content in teaching	445	2	4	3.52	0.575

Appendix 3. Response rate of multiple-choice questions (Teachers).

Variable name	Select	Percentage of total sample
Green environment concept	Green space, fresh air	54.5%
	Environmentally friendly living space	43.6%
	An area with a balance between development and nature protection	43.6%
	Sustainable living environment, ecological balance	92.7%
Student performance	Littering	41.8%
	Not cleaning the classroom	32.7%
	No protection of trees	3.6%
	Not saving electricity and water	21.8%
	No signs of environmental impact (MT)	36.4%
Activities to educate students' awareness	Learning Project	90.9%
	Seminar	60.0%
	Creative competitions	70.9%
	Volunteer activities	89.1%
Integrated environmental education subject	Biology/Natural Science	92.7%
	History and Geography	83.6%
	Literature	83.6%
	Civic Education/Legal and Economic Education	83.6%
	Other subjects	54.5%
Integrated content of environmental education	Analysis of nature-related products	87.3%
	Discussion on environmental cultural values	67.3%
	Creative exercises about the environment	69.1%
	Learning Project on Environment	83.6%
Difficulties in integrating environmental education content	Missing references	60.0%
	Lack of teaching time	78.2%
	Students lack interest	29.1%
	The lecture is dry and lacks vitality.	20.0%
Forms of integrating environmental education content	Theory lecture	81.8%
	Group discussion	81.8%
	Real Project	60.0%
	Creative experiential activities	74.5%
Environmental education measures	Organize practical sessions	94.5%
	Additional teaching materials	69.1%
	Strengthen communication	81.8%
	Building an integrated curriculum	74.5%

Appendix 4. Response rate of multiple-choice questions (Students).

Variable name	Select	Percentage of total sample
Green environment concept	Green space, fresh air	49.4%
	Environmentally friendly living space	43.4%
	An area with a balance between development and nature protection	41.8%
	Sustainable living environment, ecological balance	89.7%
Environmental sanitation status	Littering	51.0%
	Unsanitary classrooms	40.7%
	No protection of trees	33.5%
	Not saving electricity and water	14.6%
	None of the above symptoms	35.5%
Responsibility for environmental protection	The student himself	46.5%
	School	38.9%
	Community	49.9%
	All parties involved	78.4%
Environmental protection activities	Tree Planting Campaign	39.8%
	Clean the school	88.8%
	Environmental propaganda	62.0%
	Creative activities related to the environment	53.7%
Activities to raise awareness of environmental protection	Learning Project	63.1%
	Seminar	42.0%
	Creative competitions	59.6%
	Volunteer activities	73.0%
Integrated content in the literature subject	Analysis of nature-related products	70.3%
	Discussing MT cultural values	63.1%
	Creative exercises on environmental protection	65.2%
	Environmental Learning Project	63.8%
Difficulties	Lack of study materials	41.6%
	Lack of time to study	44.0%
	Students lack interest	56.9%
	Dry, lifeless lessons	43.4%
Lessons from literature	Lessons on how to behave with the ecological environment	80.7%
	Lessons on love of nature and animals	66.1%
	Lessons on environmental friendliness	62.5%
	Lessons on environmental protection	83.1%
Environmental education measures	Organize practical sessions	80.4%
	Additional teaching materials	51.0%
	Strengthen communication	62.5%
	Building an integrated curriculum	63.4%