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Interrelation between Humans and Environment in Folk Literature: Ecocriticism in Higher Education

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ABSTRACT

As environmental issues have been of global interest for decades, this study investigated the interrelation between humans and the environment in folk literature through the lens of ecocriticism in higher education. The research aimed to assess students' understanding before and after lessons emphasizing ecocriticism theory and explore changes in their perceived environmental attitudes and behaviors. The study employed a mixed-method research methodology, combining qualitative and quantitative approaches. The population consisted of English major students enrolled in an undergraduate literature course, with a sample of 48 students selected conveniently from the first semester of the 2023 academic year. Data analysis utilized descriptive statistics (mean, standard deviation, frequency, and percentage) and parametric inferential statistics. Key findings indicate that students' understanding of ecocriticism theory improved significantly after the lessons. Additionally, there were noticeable changes in students' perceived environmental attitudes and behaviors following the intervention.

Keywords: environment, ecocriticism, folk literature, language learning attitudes, behaviors

Introduction

Environmental issues have been a significant concern in Western societies for decades. With advancements in communication technology, awareness of these problems has spread globally. Events like the 2019 Amazon rainforest fires in Brazil, which drew worldwide attention due to their destruction of the "lungs of the world," have heightened public concern. Experts attribute these fires, along with large wildfires in Central Africa that same year, to human activities. Similarly, in 2020 Australia experienced a devastating wildfire that led to significant losses in biodiversity, followed by severe flooding in various countries, including England, the U.S., China, and Brazil.

In Thailand, environmental awareness surged with the 2019 death of Mariam, a baby dugong, due to plastic waste obstructing her intestines. This incident underscored Thailand's marine waste crisis, with the Department of Marine and Coastal Resources reporting that up to 1 million tons of waste are dumped into the sea annually (Strategy and Planning Division, Department of Marine and Coastal Resources, 2019). Additionally, air pollution caused by PM 2.5 particles continues to threaten public health, and northern Thailand has recently faced destructive flooding, with the recovery effort still ongoing in some areas. These examples make it clear that human activities are central to many environmental crises and, therefore, must also be part of the solution.

While these events are often viewed as scientific issues (Garrard, 2012, pp. 1-3), scholars like Glotfelty (1996, p. xix) and Buell (1995, p. 2) argue that environmental problems extend beyond scientific analysis to include cultural and ethical concerns. Buell (1995, pp. 1-6) highlights that the root of these crises lies in an anthropocentric worldview, where humans are seen as central to the environment's value.

This view is supported by Glotfelty (1996) and Garrard (2012), who suggest that literary studies can illuminate the connections between society and environmental problems, offering insights through both scientific and cultural lenses. Revisiting the relationship between humans and the environment is thus essential to addressing the environmental challenges we face today.

Serious focus on environmental awareness in literature did not begin until the mid-1980s with the rise of ecocriticism, a field that explores the relationship between literature and the physical environment. Ecocriticism emphasizes the interconnectedness of human culture and the natural world, addressing themes like pollution, planetary futures, and habitation through

in-depth textual analysis and interdisciplinary approaches (Pradittatsanee, 2016, pp. 7-18).

Environmental literature, often referred to as "Environmental Writing" or "Nature Writing," reflects these concerns. Buell (1995, pp. 7-8) identifies four key characteristics of environmental literature: 1) the non-human environment is central to human history, not merely a backdrop; 2) the focus extends beyond human interests; 3) human responsibility to the environment is part of its ethical framework; and 4) the environment is depicted as a dynamic, ever-changing process. These elements are also found in folk literature, particularly in myths and folktales. For example, Zekavat (2014) argues that mythology provides insight into both cultural values and ecosystems while promoting ecological awareness. Similarly, Mago & Anand (2022) explore Indian folklore and its role in nature conservation, demonstrating how human-nature relationships are woven into cultural narratives that are often seen through an ecological lens.

Several studies have investigated the role of literature in fostering environmental responsibility. Wilks & Harris (2016) found that young people are aware of environmental issues, but often need guidance to translate that knowledge into action. In another study, Swarts et al. (2018) advocated for place-based education as a way to instill social and environmental responsibility in learners.

Importantly, recent pedagogical approaches also emphasize the need to move beyond moral instruction to foster critical, dialogic engagement with environmental issues. Myren-Svelstad (2023) shows that transactional, collaborative literary inquiry develops Education for Sustainable Development (ESD) competencies—systems thinking, self-awareness, and tolerance for ambiguity—by positioning students as co-constructors and privileging open-ended exploration over fixed values.

In Thailand, Ninwonnapa & Prasertsung (2016) examined Isan folk literature and its reflection of nature-related beliefs, while Yeunsak et al. (2019) studied the Mae Sai community's oral traditions, which emphasize the human-environment relationship through agricultural and blacksmithing rituals. Nualsiri (2020) showed how drama activities, based on short stories, shifted students' perspectives from anthropocentric to ecocentric views. Despite this, research on folk literature from an environmental perspective remains limited (Kaewsri et al., 2021).

This gap in research has led to the integration of ecocriticism into the curriculum of a northern Thai university's English program, where Greek and Roman mythology (*Cupid and Psyche*, and *Hercules)*, along with Western and Chinese folktales (*Cinderella* and *Ye Xian*), are explored to analyze human-environment relationships in Prose, a required course for English majors.

This interdisciplinary approach helps students develop both analytical skills and environmental awareness. To evaluate the impact of this integration, this study investigates students' understanding of ecocriticism before and after engaging with a lesson plan focused on environmental themes, as well as their attitudes and behaviors toward the environment. To achieve these objectives, this study addresses the following research questions:

1) How does an ecocriticism-focused lesson plan impact students' understanding of ecocriticism, as measured before and after the intervention?

2) What changes occur in students' environmental attitudes after engaging with ecocriticism in folk literature?

3) How does exposure to ecocriticism in folk literature influence students' self-reported environmental behaviors?

4) How do students reflect on their relationship with the environment after engaging with ecocriticism in folk literature?

Literature review

Ecocriticism, Environmental Awareness, and Sustainable Development Goals (SDGs)

Ecocriticism, as defined by Glotfelty (1996, p. xviii), explores the interconnectedness between human culture and the natural world, with a particular emphasis on how literature reflects these relationships. It adopts an earth-centered approach, recognizing the pivotal role the environment plays in shaping human narratives and cultural expressions. This perspective views the physical world not as a passive backdrop, but as an active force that influences and is influenced by human culture. As Glotfelty (1996, p. xix) notes, human culture and the environment are inseparable, constantly interacting and shaping each other.

Garrard (2012, pp. 3-5) extends this idea, noting that ecocriticism examines how cultural processes engage with the natural world, offering insights into how nature is represented in literature. He emphasizes that literature, through various genres, serves as a reflection of society's relationship with the environment. By analyzing texts through an ecocritical lens, we can uncover the ways in which human actions, attitudes, and ideologies towards nature are expressed, and how literature addresses ecological concerns such as pollution, deforestation, and species extinction.

Furthermore, ecocriticism engages with the ethical and political dimensions of environmental literature. Glotfelty (1996, p. xix) describes ecocriticism as having "one foot in literature and the other on land," emphasizing its dual focus on textual analysis and real-world environmental

issues. This approach reveals the moral implications of human interactions with nature, as reflected in literary works. Garrard (2012, p. 8) highlights the ethical consequences of environmental degradation, as seen in themes like pastoral idealism and apocalyptic warnings. Also, scholars like Adamson (2001) and Gaard (1998) argue that ecocritical literary analysis can cultivate environmental consciousness and foster more sustainable behaviors. This insight echoed by Myren-Svelstad (2020), who views ecocriticism as an interdisciplinary bridge between literary education and environmental sustainability, supporting Education for Sustainable Development (ESD) through critical thinking, ethical awareness, and ecological literacy.

In this context, UNESCO (2017) defines ESD as a learning approach that fosters the knowledge, skills, attitudes, and values necessary for individuals to contribute to sustainable development. This pedagogical orientation is strongly exemplified in Myren-Svelstad's (2023) empirical study on dialogic teaching using ecocentric poetry. In this study, he advocates for transactional reading methods and dialogic instruction, highlighting how classroom discussion and reflective engagement foster students' performative literacy. His application of Blau's (2003) framework—textual, intertextual, and performative literacy—offers a valuable model for literature educators seeking to integrate sustainability education through literary analysis.

Extending this pedagogical framework, ESD offers a structured approach to embedding ecocriticism within sustainability curricula as ecocriticism enhances students' ability to engage critically with ecological challenges and fosters environmental responsibility (UNESCO, 2017).

The Sustainable Development Goals (SDGs), established by the United Nations in 2015, further reinforce this educational imperative. SDG 4 (Quality Education) emphasizes the importance of interdisciplinary and transformative learning, encouraging critical thinking and ethical reasoning (Tilbury, 2011). SDG 13 (Climate Action) highlights the urgency of climate literacy, which literature can enhance by prompting reflection on human–nature relationships. SDG 15 (Life on Land) underscores the significance of biodiversity and conservation, both of which are prevalent in ecocritical readings of folk literature that depict the interdependence between humans and the environment (Concina & Frate, 2023; Gould et al., 2018).

Ecocritical Readings of Folk Literature

Folk literature refers to the culturally rooted body of literary works that emerge from folk societies, including verbal and non-verbal forms. These works, such as folktales, legends, myths, fables, and ballads, play a key role in shaping community worldviews and identities (Mouli, 2022; Zheng, 2021).

Historically, folk literature, especially fables and animal myths, have conveyed messages of interdependence among species; though this is often framed through relationships of human dominance (Martín Junquera & Molina Moreno, 2018). From an environmental management perspective, human societies have often addressed ecological challenges, particularly through education. In the humanities, stories and beliefs often provide guidance on how humans can coexist in harmony with nature. Myths and folktales tied to religious and social teachings promote philosophies of mutual reliance and harmonious living.

Zekavat (2014) argues that some myths have perpetuated ecological biases—such as anthropocentrism and the instrumentalization of nature—leading to the exploitation of natural resources. However, from an ecocentric perspective, folk literature often reflects a deeper connection between humans and nature, promoting humility and respect for the environment as essential for coexistence. For example, in Greek and Roman mythology, natural forces are governed by gods like Zeus, Dionysus, and Artemis. Human actions often require divine permission, underscoring humanity's subordinate relationship to nature. Similarly, in Thailand practices such as tree ordination and events like the Naga Fireball festival reflect reverence for nature, illustrating how these traditions foster peaceful coexistence with the environment. Folk literature also teaches practical lessons for preventing environmental problems. Stories embed ecological wisdom, offering both respect for nature and practical guidance for sustainable living.

In Hamilton's *Hercules* (1998, pp. 224-243), the demi-god Hercules, born to Zeus and a mortal woman, uses supernatural powers and nature itself to complete his twelve labors. For example, he diverts two rivers to cleanse the Augean stables and captures the Stymphalian birds to restore ecological balance. This myth portrays nature as a sacred force that can only be harnessed by divine beings, suggesting that humans should not seek to dominate nature but should respect it. The *Hercules* myth offers insights into humanity's relationship with nature, emphasizing that control over nature is reserved for supernatural figures. When humans try to impose their will on nature, the consequences are often destructive, as seen in contemporary issues like deforestation and climate change. This aligns with an ecocentric worldview, advocating for environmental stewardship over domination.

In contrast, *Cupid and Psyche* (Hamilton, 1998, pp. 121-134) and the Grimm Brothers' *Cinderella* (Grimm & Grimm, 2011) presents a different relationship with nature. Cinderella's bond with the magical tree on her mother's grave, and the birds that assist her, highlight how nature rewards kindness and punishes cruelty. The birds, acting as agents of justice, expose the stepsisters' deceit by helping Cinderella and punishing the wrongdoers in

the end. Similarly, in *Ye Xian* (Beauchamp, 2010), Ye Xian befriends a fish, which leaves her a magical fishbone after being killed by her wicked stepmother. This reflects the ecocritical view that nature is an active moral force, rewarding those who live in harmony with it.

Through these stories, students engage with ecological narratives that challenge anthropocentric views. By understanding the sacredness of natural forces and the consequences of attempting to control them, students can develop a deeper sense of environmental stewardship. Including these tales in the curriculum not only enhances literary analysis but also promotes a respectful and sustainable relationship with nature.

Methodology

This research employed a mixed-methods approach, integrating both qualitative and quantitative methods. A lesson plan focused on ecocriticism in folk literature was developed, covering two three-hour units: Mythology (*Cupid and Psyche* and *Hercules*) and Folktales (*Cinderella* and *Ye Xian*). To measure students' understanding before and after engaging with the ecocriticism-focused lesson plan, online pre-tests and post-tests were administered. Following the lesson and tests, a questionnaire on environmental issues was used to assess students' environmental awareness and behaviors. Finally, semi-structured interviews were conducted to further explore students' attitudes toward the lesson and their environmental awareness and behavior. The lesson plan and tests were in English, while the questionnaire and interview were in Thai to ensure practicality, clarity, and comprehension. Three literature teachers, who have over 10 years of experience teaching English curricula at the host university, then evaluated the research instruments. These experts reviewed the content to ensure its accuracy, alignment with the study's objectives, and consistency with the course's learning outcomes. All the instruments received a perfect compliance score (compliance index = 1.00). Based on the experts' comments, the instruments were revised. Before conducting the study, the author submitted the research instruments and consent forms for ethical approval (No. 2.2/110/66). Participants were briefed on the study and signed consent forms prior to the intervention. Anonymity and confidentiality were ensured, and the data collected from participants was used solely for this study.

The population consisted of English major students enrolled in the Prose course. A sample of 48 students from the first semester of the 2023 academic year was selected using convenience sampling. This method was chosen because the author was responsible for teaching these students, making it convenient to conduct the research with them.

Rather than a general environmental awareness pretest, baseline ecocritical knowledge was assessed with a pre-instruction pretest, a deliberate design choice that kept the study focused on literary analysis rather than general environmental literacy.

The Lesson Plan, Pre-Test, and Post-Test

Each lesson plan follows a three-stage structure: pre-reading, while reading, and post-reading. The lesson was developed to assess students' understanding of ecocriticism in folk literature before and after engaging with ecocritical analysis. Additionally, it aims to examine students' environmental attitudes and behaviors after learning these narratives through an ecocritical lens.

Stage one, "Environmental Talk," was designed to spark interest in global environmental issues. This stage included four main activities: showing students a video clip or images about the current global environmental situation; having them work in pairs to discuss the causes of these issues; prompting questions to encourage them to think about potential solutions; and delivering a lecture on Mythology, followed by a discussion of myths and their connection to the natural environment.

Stage two focused on group work, aiming to help students interact with the texts and analyze the relationship between humans and the environment. In this stage, students worked in groups of 5-6 to present their analysis of the interdependent relationship between the protagonists and plants, animals, or other natural elements. They then discussed how these relationships are depicted in the texts.

In stage three, each group selected a character, plant, animal, or natural agent to analyze through an ecocritical lens. This stage encouraged students to share and discuss their attitudes or opinions about plants, animals, or natural elements, fostering deeper engagement and reflection.

The primary data collection tools were multiple-choice pre-tests and post-tests, designed to assess students' understanding of ecocriticism in folk literature before and after exposure to the ecocritical lesson plan. Both tests were parallel in terms of the number of items, environmental questions, and answer choices. Prior to the lessons, students completed a pre-test, which consisted of seven questions per topic, totaling fourteen questions. After the lessons, they took a post-test. Both the pre-tests and post-tests were administered via Google Forms, with students allotted 10 minutes to complete each test.

To develop the test items, the author analyzed the four texts from an ecocritical perspective, focusing on the interconnectedness between humans

and the environment. In *Hercules*, control over nature is depicted as being reserved for supernatural figures. In contrast, an ecocritical reading of *Cupid and Psyche*, *Cinderella*, and *Ye Xian* suggests a dependent relationship between human beings and nature.

The Questionnaire

The online questionnaire was another data collection instrument, consisting of three parts: respondents' personal information, a questionnaire on attitudes and behaviors regarding environmental issues, and an open-ended question inviting students to share their personal comments on environmental attitudes and behaviors. Each part served a distinctive purpose in collecting respondents' demographic data, their perceived environmental attitudes and behaviors, and their personal reflections on the relationship between those attitudes and behaviors.

The first section of the questionnaire consisted of two items designed to gather respondents' demographic data, specifically their gender and year of study. The second section included 11 items utilizing a five-point Likert scale, with responses ranging from Strongly Agree (5) to Strongly Disagree (1), along with an open-ended question providing both qualitative and quantitative data. These questions aimed to explore students' attitudes after engaging with the ecocritical lesson, focusing on the themes of interconnectedness between human beings and the environment as depicted in the four texts. They also mirrored the questions used in the pre-test and post-test.

The third section consisted of 13 items focused on environmental behavior. Students responded using a Likert scale ranging from Strongly Agree (5) to Strongly Disagree (1), supplemented by an open-ended question for additional comments. These questions were adapted from Ketsing (2015) and aimed to assess students' environmental actions, providing both quantitative data from the scale and qualitative insights from the open-ended responses.

The questionnaire was piloted before deployment; completion time was approximately 15 minutes.

The Semi-Structured Interview

The third instrument was a semi-structured interview conducted with 20 student representatives, who were asked to share their thoughts on the lesson plan and their environmental attitudes and behaviors after completing both topics. To align with the research objectives, the ecocritical lesson, and

the questionnaire, the author used three interview questions: 1) What are the students' attitudes toward the ecocriticism lesson? Has the lesson had any effect on them? 2) Does the lesson plan increase the students' awareness of environmental values, and if so, how? and 3) How does the lesson plan affect the students' environmental behavior? These questions aimed to provide insights that complemented the data from the questionnaire, particularly regarding students' environmental attitudes and behaviors. They were piloted with students enrolled in the Prose course during the third semester of the 2022 academic year.

The interview was administered in Thai. Each interview lasted approximately 5 to 10 minutes and was conducted via MS Teams. The interviewees provided consent for recording the interviews.

To enhance credibility, the author employed member checking. One week after transcription, each interviewee joined an online follow-up meeting to verify the accuracy of their transcript and clarify any ambiguities. The author then conducted a thematic analysis, coding and grouping excerpts into categories and themes. Finally, the data were translated into English; the translation was reviewed by a professional translator and proofread by a native English speaker.

Results

This section reports the results in three parts: (1) a pre-test and post-test analysis of students' understanding of the lesson on ecocriticism; (2) descriptive and inferential analyses of questionnaire data (demographics and environmental attitudes and behaviors); and (3) qualitative findings from semi-structured interviews that triangulate and extend the survey results.

Student understanding before and after learning with an ecocriticism-focused lesson plan

The study on students' understanding before and after the ecocriticism-focused lesson plan was conducted by comparing pre-test and post-test scores. Out of the 48 students in the sample, 39 completed both assessments, while the remaining 9 students took either only the pre-test or only the post-test. To ensure the validity of statistical comparisons, only complete paired responses (N=39) were included in the analysis. Since incomplete data sets could compromise the reliability of paired statistical analyses, participants with missing data in either assessment were excluded to maintain consistency in the data set. Descriptive statistics, including mean,

standard deviation, and frequency, along with parametric tests, were used to analyze the students' results.

Table 1

Students' Understanding Before and After Learning with an Ecocriticism-Focused Lesson Plan

Test	N	M	SD	95% CI [LL, UL]	t	df	p (2-tailed)
Pre-test	39	4.41	2.32	[3.63,5.19]			
Post-test	39	8.95	3.12	[7.99, 9.91]			
Difference					2.59	38	.014

Table 1 shows a significant pre–post gain in understanding (pretest M= 4.41, SD = 2.32; posttest M= 8.95, SD = 3.12), paired-samples $t(38)$ = 2.59, p = .014.

Students' environmental attitudes and behaviors

Analyses drew on questionnaire data. The author summarized participants' gender and year of study using frequencies and percentages (Table 2). Predefined cut-off ranges for environmental attitudes were presented (Table 3), and attitude scores were reported as means (M) and standard deviations (SD) (Table 4). Similarly, the author presented cut-off ranges for environmental behaviors (Table 5) and reported behavior scores with M and SD (Table 6). No responses were provided to the open-ended items; therefore, only quantitative results are reported.

Table 2

Respondent Demographics by Gender

Number of respondents	Gender			Year of study	
	M	F	U/F	3	4
N=48 (%)	(%)	(%)	(%)	(%)	(%)
40 (83.3)	8 (20)	30 (75)	2 (5)	37 (92.5)	3 (7.5)

As shown in Table 2, 83.3% of the 48 respondents completed the questionnaire. Among them, 20% were male (8 respondents), 75% were

female (30 respondents), and 5% (2 respondents) did not specify their gender. Regarding their year of study, 92.5% (37 respondents) were third-year students, while 7.5% (3 respondents) were in their fourth year.

Table 3

Average Attitude Score Interpretation

Average score	Interpretation
4.21 - 5.00	Highest level of attitude
3.41 - 4.20	High level of attitude
2.61 - 3.40	Moderate level of attitude
1.81 - 2.60	Low level of attitude
1.00 - 1.80	Lowest level of attitude

Table 4

Students' Environmental Attitudes

Attitude	M	SD	Level of attitude
Humans are part of nature	4.58	0.55	Highest
Humans and nature are interconnected	4.55	0.50	Highest
There is a supernatural force controlling humans and nature	3.25	1.08	Moderate
Supernatural beings can use nature for their purposes	3.25	1.15	Moderate
Humans can use nature only with the consent of supernatural beings	3.03	1.21	Moderate
Ordinary humans cannot conquer nature	3.60	1.13	High
Nature is awe-inspiring	4.33	0.76	Highest
Humans depend on nature, directly or indirectly	4.60	0.59	Highest
Nature is aware of human actions	4.38	0.87	Highest
Nature is a refuge and helps humans in times of trouble	4.38	0.87	Highest
Nature chooses to help good people	3.53	1.13	High
Overall Average	**3.96**	**0.89**	**High**

From Table 4, the overall level of students' environmental attitudes is high, $M = 3.96$, $SD = 0.89$ on a 1-5 scale. Attitudes such as "Humans depend on nature, directly or indirectly" ($M = 4.60$, $SD = 0.59$), "Humans are part of nature" ($M = 4.58$, $SD = 0.55$), and "Nature is awe-inspiring" ($M = 4.33$, $SD = 0.76$) show the strongest agreement, indicating a deep recognition of the connection and reliance between humans and the natural world. Similarly,

students believe that "Nature is aware of human actions" and can act as "a refuge in times of trouble" (M = 4.38, SD = 0.87).

In contrast, beliefs related to supernatural influences on nature, such as the idea that "There is a supernatural force controlling humans and nature" (M = 3.25, SD = 1.08), show moderate levels of agreement, suggesting variability in how students perceive the role of the supernatural in nature. These findings highlight students' general respect for nature's power and their awareness of their dependency on it, while their beliefs in supernatural elements remain more nuanced.

Table 5

Average Behavior Score Interpretation

Average score	Interpretation
4.21 - 5.00	Highest level of environmental behavior
3.41 - 4.20	High level of environmental behavior
2.61 - 3.40	Moderate level of environmental behavior
1.81 - 2.60	Low level of environmental behavior
1.00 - 1.80	Lowest level of environmental behavior

Table 6

Students' Environmental Behavior

Behavior	M	SD	Level of environmental behavior
Proactive environmental awareness			
I care about and value nature and the environment.	4.43	0.64	Highest
I follow environmental news.	3.55	1.04	High
Waste reduction and management			
I reduce waste by choosing products made from recycled materials.	4.03	0.77	High
I use cloth bags instead of plastic bags.	4.13	1.04	High
I separate waste before disposing of it in the trash.	3.95	0.96	High
Energy conservation			
I only turn on the lights when necessary.	4.60	0.50	Highest
I turn off the lights when not using electrical devices.	4.68	0.47	Highest
I iron clothes one at a time.	3.05	1.40	Moderate
I set the air conditioner to 25 degrees Celsius.	4.00	0.91	High
Paper usage reduction			

I reduce submitting assignments on paper.	4.38	0.98	Highest
I read documents electronically instead of on paper.	4.55	0.75	Highest
Water conservation			
I leave the water running while showering or brushing my teeth.	2.20	1.20	Low
Engagement in eco-friendly initiatives			
I participate in environmental activities.	3.15	1.19	Moderate
Overall average	**3.90**	**0.91**	**High**

The analysis shows that students are generally engaged in environmentally friendly behaviors, with an overall average score of 3.90. They are especially strong in energy-saving practices, like "Turning off lights when not using electrical devices" (M = 4.68, SD = 0.47) and "Only turning on lights when necessary" (M = 4.60, SD = 0.50), showing consistent efforts to conserve energy.

Students also prefer digital over paper-based methods, with high scores in "Reading documents electronically" (M = 4.55, SD = 0.75) and "Reducing paper submissions" (M = 4.38, SD = 0.98). This reflects a shift toward more sustainable practices in their studies.

Students care about nature, as indicated by their high score in "Valuing the environment" (M = 4.43, SD = 0.64). However, their engagement with environmental news is more varied (M = 3.55, SD = 1.04), showing differences in how closely they follow current issues.

In terms of waste management, students often "Use cloth bags" (M = 4.13, SD = 1.04) and "Choose recycled products" (M = 4.03, SD = 0.77), though their approach to "Separating waste" (M = 3.95, SD = 0.96) varies slightly. However, their practice of "Ironing clothes one at a time" scores lower (M = 3.05, SD = 1.40), indicating they could improve energy conservation by ironing more clothes at once.

A low score (M = 2.20, SD = 1.20) in "Leaving the water running" is actually positive, meaning most students conserve water well. There is some variation in water-saving habits, but overall, they are mindful of this resource.

Finally, students show moderate participation in activities like "Engaging in environmental initiatives" (M = 3.15, SD = 1.19), suggesting that more opportunities or motivation could boost their involvement.

However, they could improve in ironing practices and participating in environmental activities. Raising awareness in these areas could help students match their actions with their positive attitudes towards sustainability.

Students' attitudes toward the ecocriticism-focused lesson, students' environmental awareness and students' environmental behavior

This section presents qualitative analysis from interview data. Interviews followed a semi-structured format, allowing follow-up questions to elicit elaboration and clarify responses, including when participants experienced difficulty or hesitancy. Data were collected from 20 volunteer students who were invited to participate after completing the two lesson plans. Interviews were conducted online via Microsoft Teams at scheduled times; each lasted approximately 5–10 minutes, was recorded, and transcribed. To protect confidentiality, participants are anonymized as A1–A20, with gender indicated by M or F.

Table 7 reports participant demographics (counts and percentages by gender). Interview findings for Questions 1–3 are presented next. Tables 8–10 summarize students' attitudes towards ecocriticism, environmental awareness, and environmental behaviors, respectively. Data were organized thematically, and themes reported in the tables reflect areas of consensus (endorsed by >50% of interviewees).

Table 7

Demographics of the Interview Participants

Number of participants	**Gender**	
N=20 (%)	M (%)	F (%)
20 (100)	3 (15)	17 (85)

The table shows the demographic breakdown of the interview participants, with 15% male and 85% female respondents.

Table 8

Students' Attitudes toward the Ecocriticism-Focused Lesson

Question	**Students' responses**	**Categorized attitudes**
What do you think about the ecocriticism lesson plan? Has the lesson had any effect on you?	"The lesson was new and interesting. I saw another relationship between human beings and nature. We depend on trees for oxygen, and they depend on us to take care of them." (A10F)	Human-Nature Interdependence (HNI)
	"The lesson made me realize how much nature helps us, providing shade and oxygen." (A2M)	Environmental Awareness and Appreciation

	(EAA)
"It made me realize that stories aren't just fantasy; they show how much we rely on nature in real life." (A1F)	Folktales and Real-World Environmental Issues (FRI)
"It was good. It was not difficult. I switched to reusable bags because I learned how much plastic harms the environment." (A12F)	Environmental Sustainability behavior (ESB)
"It made me aware that nature is part of my life. I try not to step on ants anymore; I think they deserve to live too." (A7F)	Empathy toward Small Creatures (ESC)
"It helped me to interpret the relationship between humans and environment. I started seeing trees as more than just objects; they have emotions too." (A14F)	Emotional and Aesthetic Connection to Nature (EAN)
"I feel good when I help protect the environment, like when I save energy or avoid hurting animals." (A14F)	Satisfaction in Environmental Actions (SEA)
"I'm already close to nature, so I didn't learn anything particularly new." (A11F)	Pre-existing Environmental Values (PEV)
"It was OK. I've always liked taking care of plants, but now I see how important they are." (A4F)	Behavioral Engagement in Plant Care (BEP)

As summarized in Table 8, thematic analysis indicates cognitive, emotional, and behavioral engagement with environmental issues following the ecocriticism lesson. Under Human–Nature Interdependence (HNI), many students recognized reciprocal relations between people and the environment (e.g., A10F: "We depend on trees for oxygen, and they depend on us to take care of them"). For Environmental Awareness and Appreciation (EAA), several described heightened recognitions of nature's contributions (A2M: "The lesson made me realize how much nature helps us, providing shade and oxygen"), suggesting a shift from passive acknowledgement to active appreciation.

Within Folktales and Real-World Environmental Issues (FRI), students linked narratives to everyday ecological realities (A1F: "Stories aren't just fantasy; they show how much we rely on nature in real life"), indicating culturally resonant ecological understanding. Environmental Sustainability Behavior (ESB) and Empathy towards Small Creatures (ESC)reflected behavioral responses—adopting more sustainable practices (A12F: "I switched to reusable bags…") and showing care for small creatures (A7F: "I try not to step on ants anymore…"), signaling emergent biocentric ethics. Aesthetic/Emotional Connection (EAN) captured deeper affective ties (A14F: "I started seeing trees as more than just objects").

Additionally, Satisfaction in Environmental Actions (SEA) showed that pro-environmental acts were experienced as rewarding (A14F: "I feel good when I help protect the environment"), suggesting a positive feedback loop between action and affect. For some, Pre-existing Environmental Values (PEV) and Behavioral Engagement in Plants Care (BEF) indicated that the lesson affirmed prior orientations (A11F: "I didn't learn anything particularly new"; A4F: "I've always liked taking care of plants, but now I see how important they are"), reinforcing values through reflection.

Taken together, responses suggest gains in ecological literacy and ethical reflection, aligning with the aims of ecocriticism, folk literature, and Education for Sustainable Development (ESD).

Table 9

Students' Environmental Awareness

Question	Supporting quotes	Interpretation	Aspects of awareness
Does the lesson plan increase your awareness of environmental values, and if so, how?	"We depend on trees for oxygen, and they depend on us to take care of them." (A10F)	Students became aware of the interdependence between humans and nature.	Human-Nature Interdependence (HNI)
	"Nature supports our life, and we should protect it in return." (A5F)	Students acknowledged their shared responsibility to protect nature as a life-sustaining partner.	
	"Nature helps us live, it's all around us and supports our life." (A5F)	Students developed a deeper appreciation for nature's value, seeing it as essential to life.	Environmental Awareness and Appreciation (EAA)
	"Now I understand that trees don't just exist, they give us so much." (A18F)	Students recognized the active role of trees and nature in providing ecological services.	
	"I now see trees as more than just trees; they have feelings too." (A14F)	Some students developed an emotional or aesthetic appreciation of nature, seeing it as more alive and emotional.	Emotional and Aesthetic Connection to Nature (EAC)
	"I enjoy spending time outside more now; nature feels more alive." (A8F)	Students showed increased emotional engagement with nature and enjoyment of outdoor spaces.	
	"If we cut too many trees, the world becomes	Students recognized the importance of ecological balance and the effects of	Nature's Role in Ecological Balance

hotter, and it affects us all." (A19F)	human activities on the environment.	(NRB)
"Deforestation makes floods and pollution worse. We should not let it happen." (A9F)	Students connected deforestation to broader ecological disruptions, showing systems thinking.	
"I no longer step on ants; I try to avoid them because they're alive too." (A7F)	Students expressed empathy for small creatures, reflecting a change in their attitude toward animals.	Empathy Toward Small Creatures (ESC)
"Even tiny creatures' matter. I now see insects differently." (A20F)	Students re-evaluated their attitudes toward insects and animals, showing moral growth.	

Table 9 shows that the ecocriticism lesson fostered environmental awareness beyond factual recall, encompassing affective, ethical, and systems thinking consistent with contemporary environmental education and ecocriticism.

To begin with, the Human–Nature Interdependence (HNI) theme showed that students recognized reciprocal relations between people and the environment and the responsibilities these entail; for example, A10F noted, "We depend on trees for oxygen, and they depend on us to take care of them," and A5F added, "Nature supports our life, and we should protect it in return." Next, the Environmental Awareness and Appreciation (EAA) theme indicated a heightened recognition of nature's often unseen services; for instance, A18F reflected, "Trees don't just exist; they give us so much," while A5F remarked, "Nature helps us live and supports our life." Building on this, the Emotional and Aesthetic Connection to Nature (EAC) theme suggested that students increasingly construed nature as a meaningful presence rather than a neutral backdrop; A14F explained, "I now see trees as more than just trees; they have feelings too," and A8F observed, "I enjoy spending time outside more now; nature feels more alive."

In addition, the Nature's Role in Ecological Balance (NRB)theme evidenced emerging systems thinking, as students connected specific human actions to wider ecological consequences; A19F reasoned, "If we cut down too many trees, the world becomes hotter," and A9F commented, "Deforestation makes floods and pollution worse." Finally, the Empathy towards Small Creatures (ESC) theme reflected movement beyond anthropocentrism, extending moral consideration to non-human life; for example, A7F stated, "I no longer step on ants," and A20F concluded, "Even tiny creatures matter."

Overall, these patterns point to cognitive, affective, ethical, and systems-oriented engagement that aligns with broader sustainability frameworks, including the United Nations Sustainable Development Goals (SDG 4: Quality Education; SDG 13: Climate Action; SDG 15: Life on Land).

Table 10

Students' Environmental Behavior

Question	Supporting quotes	Interpretation	Environmental behavior
How does the lesson plan affect your environmental behavior?	"I've switched to reusable bags because I learned that using plastic contributes to global warming." (A12F)	Students reported adopting eco-friendly behaviors such as reducing waste, conserving energy, and using sustainable products.	Increased Environmental Responsibility (IER)
	"Now I turn off the lights more often because I know it helps the planet." (A16F)	Students applied simple but effective energy-saving habits to reduce environmental impact.	
	"I planted a tree in my backyard after the lesson." (A13M)	Students translated ecological awareness into direct action, engaging in environmentally restorative activities.	Behavioral Change Toward Plants (BCP)
	"I started caring for plants more, watering them regularly and appreciating their beauty." (A18F)	Some students became more mindful of taking care of plants, spending time in nature, and understanding the importance of greenery.	
	"I try not to step on ants anymore, and I even tell others not to kill them." (A7F)	Students developed a more compassionate attitude toward small creatures like ants and birds, often choosing not to harm them.	Compassionate Attitude Toward Small Creatures (CSC)
	"I now stop my friends from killing insects because they are part of nature too." (A20F)	Students extended their empathy into advocacy by influencing others' behavior toward animals.	

	"I feel good when I help protect the environment, like when I save energy or avoid hurting animals." (A14F)	Students expressed personal satisfaction and fulfillment from engaging in eco-friendly behaviors such as conserving energy or protecting animals.	Satisfaction in Environmental Actions (SEA)
	"Helping the environment makes me feel responsible and happy." (A15F)	Students linked environmental actions to a sense of well-being and responsibility.	
	"I always took care of plants, but now I see how much they matter." (A4F)	Students with prior environmental awareness deepened their appreciation and intention to act.	Pre-existing Environmental Values Reinforced (PEV)
	"I've always tried to be kind to animals and nature, and now I feel even more committed to continuing these habits." (A9F)	Some students already practiced environmental behaviors before the lessons, and the lessons strengthened their commitment to these practices.	

From Table 10, the ecocriticism lesson was associated with reports of environmentally responsible behaviors, suggesting the internalization of ecological values and their translation into action.

To begin with, Increased Environmental Responsibility (IER) indicated that students adopted new sustainable practices; for example, A12F stated, "I've switched to reusable bags," and A16F noted, "Now I turn off the lights more often." Next, Behavioral Change towards Plants (BCP) captured planting and routine care that signaled sustained engagement with nature (A13M; A18F). Moreover, Compassion for Small Creatures (CSC) showed that empathy extended to everyday advocacy, with students discouraging harm to insects; for instance, A7F explained, "I try not to step on ants anymore," and A20F affirmed, "Even tiny creatures matter."

In addition, Satisfaction in Environmental Actions (SEA) revealed that students felt good and responsible when acting sustainably; A14F remarked, "I feel good when I help protect the environment," and A15F described a similar sense of responsibility after pro-environmental choices. Finally, Pre-existing Environmental Values (PEV) highlighted that, for some participants, the lesson consolidated rather than initiated pro-environmental habits; for example, A4F reflected, "I've always liked taking care of plants, but now I see how important they are," while A9F indicated that existing orientations were reinforced.

Collectively, these patterns suggest a movement from awareness to stewardship and align with SDG 13 (Climate Action) and SDG 15 (Life on Land), while SEA also resonates with SDG 3 (Good Health and Well-being).

Discussion and Conclusion

This study investigated students' understanding of ecocriticism before and after engaging with a lesson plan centered on environmental themes and their attitudes and behaviors toward the environment. The results on the effectiveness of the ecocriticism-focused lesson plans on students' understanding revealed a substantial improvement. This improvement suggests that the teaching approach successfully deepened students' understanding of ecocriticism. The observed growth is likely attributed to the engaging and accessible nature of the lesson plan, which incorporated folklore content, including mythological and fairy tales, that resonated with students. These narratives often reflect the historical and ecological relationships between humans and the environment, emphasizing values like humility and respect for nature. Such stories naturally highlight the interdependence between people and the natural world, which aligns with the fundamental principles of ecocriticism. When these ecological themes were clearly communicated, students' comprehension improved, supporting Mago & Anand's (2022) hypothesis that examining ecological worldviews through literature enhances understanding of the connections among humans, nature, and deities. This outcome also contributes to SDG 4 (Quality Education), particularly in its aim to promote transformative, interdisciplinary learning that equips students with competencies for sustainable development.

Interviews with 20 volunteer students provided further insights, with most offering positive feedback on the lesson plan. Many appreciated its structure and content, highlighting its interactive nature as both engaging and thought-provoking. Several students expressed how the lessons helped them reconsider their relationship with the environment:

> A2M: "The lesson made me realize how much nature helps us, providing shade and oxygen."
> A3F: "The lesson is interesting, allowing for a deeper perspective."
> A4F: "The lesson is novel, offering a new perspective and is not boring."

These insights suggest that the lesson plan effectively increased environmental awareness and encouraged positive environmental behaviors

among students. This finding aligns with the study by Li et al. (2024), which demonstrated that targeted environmental education programs at Chinese universities positively influenced students' attitudes and behaviors toward the environment. Their study highlighted a positive correlation between increased environmental knowledge and the adoption of sustainable behaviors, further emphasizing the potential of educational interventions to inspire meaningful change.

However, while the rise in students' understanding of ecocriticism after the lesson plan demonstrates effective content delivery, there are limitations to focusing solely on the transmission of information. As Myren-Svelstad (2020) points out, merely increasing knowledge does not always result in lasting behavioral changes. Instead, fostering a deeper emotional and experiential connection with the material is often necessary to ensure shifts in attitudes and behaviors. This aligns with Myren-Svelstad's (2023) emphasis on a dialogic and performative approach to literary education, which promotes metacognitive reflection, ecological empathy, and a tolerance for complexity—key competencies in Education for Sustainable Development. This idea is supported by the reflections of some of the students interviewed, particularly by those who felt a personal connection to the stories, which led them to rethink their actions toward the environment:

> A1F: "The lesson is quite easy to understand... It made me realize that stories aren't just fantasy; they show how much we rely on nature in real life."

These reflections illustrate the importance of lesson plans that are interactive and emotionally engaging. By building stronger connections between students and the material, such designs can promote lasting changes in ecological perspectives and behaviors, not just knowledge gains. This approach aligns with Education for Sustainable Development, which emphasizes critical reflection, self-awareness, and problem-solving as core competencies (UNESCO, 2017).

The second objective of this study was to investigate students' environmental attitudes and behaviors. This study finds that students' environmental awareness, understanding, and behaviors significantly improved, and it suggests that engaging and relatable content is key to the effectiveness of environmental education.

Results from the questionnaire and semi-structured interviews (Tables 3-6 and 9-10) indicate that the overall level of students' environmental attitudes is high. Statements like "Humans depend on nature, directly or indirectly" (M = 4.60, SD = 0.59), "Humans are part of nature" (M = 4.58,

SD = 0.55), and "Nature is awe-inspiring" (*M* = 4.33, *SD* = 0.76) received the strongest levels of agreement, reflecting a profound awareness of the interconnectedness between humans and the natural world. Additionally, many students perceive nature as "aware of human actions" and a "refuge in times of trouble" (*M* = 4.38, *SD* = 0.87).

In contrast, beliefs related to supernatural influences on nature, such as "There is a supernatural force controlling humans and nature" (*M* = 3.25, *SD* = 1.08), show moderate agreement, indicating variability in students' perceptions of a supernatural role in nature. These findings suggest a strong respect for nature's power and an awareness of dependency on it, while beliefs in supernatural elements remain more varied.

Students' attitudes reflect ecocritical themes in the folk texts, which stress interdependence among humans, animals, plants, and supernatural beings. This ecocentric view places humans within—rather than above—the ecosystem and affirms the intrinsic value of all entities, emphasizing balance with natural and supernatural forces. Such a perspective challenges anthropocentric assumptions and fosters a more humble sense of place. Similar effects are reported by Nualsiri (2020), where ecocentric readings in a Thai university course heightened awareness of animal vulnerabilities and encouraged solution-focused responses.

These results suggest that positive environmental attitudes and behaviors can develop quickly when content is relatable. Students recognized nature's value—especially its role in sustaining human life—and reported concrete changes: greater environmental care, energy and water conservation, and reduced air-conditioning use. This pattern indicates effective transfer from awareness to action and aligns with Wilks & Harris (2016), who emphasize supporting students to apply environmental understanding in everyday life.

These pro-environmental actions, as seen in Table 10 (e.g., switching to reusable bags or conserving energy), strongly align with SDG 13 (Climate Action) and SDG 15 (Life of Land), indicating that ecocritical pedagogy can contribute meaningfully to sustainability targets.

Questionnaire results indicate strong energy-conservation behaviors. In line with Ketsing (2015), such practices appear easy to adopt without reducing convenience. A notable exception is ironing: many students iron single items rather than batching, likely because time constraints and fast-paced routines make batching impractical for Gen Z. Targeted campaigns could highlight the efficiency gains of batch ironing.

Interviews with 20 volunteers corroborate the survey. Students reported heightened awareness of environmental issues and self-reported behavior changes, including increased recycling, energy and water

conservation, and waste reduction; several intended to maintain these habits long term. Thematic patterns (Tables 8–9) also show growing empathy and emotional connection to nonhuman life, such as viewing trees as sentient or avoiding stepping on ants, consistent with biocentric ethics cultivated through ecocritical study (Zekavat, 2014).

> A12F*:* "I've switched to reusable bags because I learned that using plastic contributes to global warming."
> A14F: "I feel good when I help protect the environment, like when I save energy or avoid hurting animals."

These responses suggest that folk literature appears to foster pro-environmental behavior. Consistent with Tamar et al. (2020), biospheric and altruistic values are linked to stronger environmental attitudes and actions, and environmental knowledge is a key predictor. Integrating folk literature into instruction can build such knowledge, reshape attitudes, and prompt ecological awareness and action. Narratives that foreground human–nature interdependence help instill values that translate into behavioral change, as reflected in students' self-reports. Moreover, students' sense of fulfilment after sustainable practices (SEA theme, Table 10) aligns with SDG 3 (Good Health and Well-being) and with evidence that environmental action supports psychological satisfaction (Ronen & Kerret, 2020).

This research has various teaching implications. Integrating ecocriticism and folk literature can strengthen subject learning and encourage biocentric values alongside practical ecological action. Teacher-education programs should train instructors to teach ecocriticism and to use folk narratives so students connect environmental themes with language and culture. Collaboration between literature/English educators and environmental scientists can produce curricula that bridge the humanities and environmental studies, giving students a fuller understanding of both evidence and interpretation. This approach reflects Kerridge's (2012) view that ecocritical teaching should join "imaginative freedom" with "scientific accuracy." Institutions should also embed ecological criticism and environmental education across subjects to offer a holistic view of sustainability, as Tilbury (2011) recommends. The pedagogical model used here provides a practical, adaptable template for course and program design and supports the broader aims of the United Nations' 2030 Agenda for Sustainable Development.

This study, while insightful, has certain limitations that warrant consideration. First, a small, demographically narrow sample from one institution limits generalizability; future studies should recruit across ages, programs, genders, and cultures to capture wider responses to folk literature and ecocriticism. Second, the cultural corpus—Greek, German, and Chinese tales—restricts transferability, including to Thai contexts; subsequent work should include more traditions with varied environmental motifs. Third, excluding nine partial completers reduced the analytic sample to 39; although appropriate for paired tests, this may introduce selection bias. Designs that reduce missing data (e.g., flexible testing windows, alternative assessment formats, proactive follow-ups) would improve inclusivity. Fourth, baseline measurement was limited: we lacked a pre-recruitment environmental awareness screen and used an ecocriticism pre-test as a proxy; validated baseline instruments would strengthen causal claims. Finally, technology and time horizon matter: interactive tools (digital storytelling, simulations, platform-based tasks) may deepen engagement, and longitudinal designs are needed to test whether attitudinal gains persist and translate into measurable ecological behaviors. These enhancements would better inform curriculum, teacher education, and policy.

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