



Mobile Assisted-Based Learning in Teaching Literature: Raising Students' Environmental Awareness and Appreciation in EFL Classroom

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ABSTRACT

Teaching literature enhances sensitivity to life's values across diverse cultural expressions, while culturally grounded English aims to instill an appreciation for these values. Environmental themes in literary works underscore safety and sustainability and promote public awareness and appreciation for environmental preservation. The article explores how mobile-assisted learning can enhance students' understanding and appreciation of environmental themes in literature within the context of English as a Foreign Language (EFL) classrooms. This study is qualitative research, using semi-structured interviews and questionnaires as the instruments by which the data were collected. Involving 32 English Education Department students, this study presents information about mobile-assisted learning (MAL) applications in teaching literature. As a result, through the MAL model, students engage in various activities in the classroom, such as reading, writing, discussing, and presenting ideas. Students' enthusiasm indicates their deep understanding of the effectiveness of the MAL learning model for visual attraction and clarity. It provides visual information about the dangerous effects of environmental damage. This could be seen in their responses to sadness, worry, anxiety, and anger. Further research could use this finding as a new starting point to explore specific mobile apps' effectiveness, long-term impacts on literary awareness and appreciation, comparative studies across different age groups, and the role of teacher facilitation in mobile-assisted EFL literature instruction.



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INTRODUCTION

Mobile-assisted learning (MAL) uses mobile devices like smartphones and tablets to facilitate and enhance learning experiences (Jaelani & Adung, 2022). MAL specifically focuses on leveraging portability as a subset of Mobile Learning (m-Learning). It also emphasizes the importance of connectivity (Tredoux et al., 2016) and the multimedia capabilities of mobile devices to support educational activities (Darsih & Asikin, 2020; Nushi & Eqbali, 2017). The ubiquitous nature of mobile devices has transformed traditional learning environments, offering greater flexibility and accessibility for students. Putra & Santosa, (2020) MAL has been widely adopted across various educational contexts, from primary to higher education, due to its potential to provide personalized and engaging learning experiences.

MAL refers to using mobile devices, such as smartphones and tablets, as tools to support the teaching-learning process. Numerous studies have highlighted the effectiveness of MAL in various educational settings. For instance, a study by Darsih & Asikin, (2020) Demonstrated that mobile devices could support language learning by providing students with opportunities for practice and exposure to the target language outside the classroom. Another study by Liu et al., (2021) showed that MAL facilitated collaborative learning and improved student engagement through interactive applications and social media platforms. Moreover, Person & Nouri, (2018) These studies reveal the benefits of MAL, which can improve accessibility, flexibility, and interactivity of learning and increase student motivation and engagement. These studies suggest that MAL can enhance traditional teaching methods, offering students additional resources and opportunities for learning.

Literary works play a significant role in education, particularly in teaching languages and cultural studies. Literature provides students with rich and diverse texts that enhance their language skills, critical thinking, and cultural awareness (Wuntu, 2017). The use of literary texts in language education is well-documented, with studies showing that literature can improve vocabulary, reading comprehension, and writing skills. (Rorintulus et al., 2024). Viana & Zyngier, (2020) examine its impact on environmental understanding, empathy, and awareness. Literary works are a mirror of environmental reality and a medium for building a deep understanding of complex environmental issues. Furthermore, literary works often address

universal themes and human experiences, making them valuable tools for fostering student empathy and understanding (Wei, 2022).

Further, Çatalbaş & Solmaz (2024) argued that literature offers a meaningful context for language learning, helping students to develop linguistic and cognitive skills. Another study by Becker (2020) found that incorporating literature into language teaching promotes critical thinking and cultural awareness. These studies emphasize the importance of literary texts in EFL classrooms, highlighting their potential to enrich the learning experience and contribute to students' overall development.

Given the benefits of both MAL and literary works in education, it is worth exploring the possibility of integrating these approaches to raise students' environmental awareness and appreciation. Environmental education is crucial in today's world, as it helps students understand the importance of sustainable practices and the impact of human activities on the planet. (Hutchison & McAlister-Shields, 2020). Literary works often explore themes related to nature, the environment, and human interactions with the natural world. (Bladow, 2022). By using MAL to teach literary works, educators can create engaging and interactive learning experiences that highlight environmental issues and encourage students to think critically about their role in protecting the environment.

Studies have shown that digital tools can enhance environmental education by providing interactive and immersive experiences. For example, Hutchison & McAlister-Shields, (2020) found that mobile devices could support outdoor learning activities, helping students observe and document environmental phenomena. Integrating MAL in the teaching of literature offers the opportunity to create a more dynamic and holistic learning experience. (Ramadhan et al., 2019) Using educational apps and platforms powered by MAL, students can access literary materials, participate in discussions, and even simulate the environments represented in literary works. (Amin et al., 2020). Schneider-Mayerson et al., (2020) add that this can help increase students' awareness and appreciation of the environmental issues raised in the literary works. Integrating MAL with literary works allows for creating multimedia content, such as videos, audio recordings, and interactive quizzes, that can deepen students' understanding of environmental themes and promote active learning. (Sumarmi et al., 2020).

Sung & Chang (2009) stated that although not specifically focused on literature, this meta-analysis provides insights into the effectiveness of mobile devices, which can be applied to MALL in literature teaching. Stockwell, G. (2007) investigates the use of mobile phones for vocabulary learning, demonstrating the potential of mobile devices in language education, including literary vocabulary. One example of MALL is the use of iPads. M. (2011) focuses on using iPads and mobile technology in language learning,

which is relevant for exploring applications in literature education. While not specific to literature, Burston J (2015) explains that this meta-analysis reviews various MALL projects and their learning outcomes, which can inform literature educators about potential benefits. These studies collectively highlight the evolving landscape of MALL and its applications in language and literature education, providing a foundation for understanding its potential impact on raising environmental awareness through literary works in the EFL classroom.

Integrating mobile-assisted learning (MAL) and literary works in teaching literature to raise environmental awareness has several implications. First, supported by Dehghanpour et al., (2022), it offers a novel approach to literature education that leverages technology to enhance student engagement and learning outcomes. Second, it addresses the need for environmental education by using literature as a medium to explore ecological themes and issues, in line with the findings of Ramadhan et al., (2019). Third, it provides a framework for developing innovative teaching practices that combine digital tools with traditional texts, promoting interdisciplinary learning and critical thinking, as emphasized by Bladow (2022). Related to the explanation above, this study tries to answer the following questions:

1. How are students' perceptions toward the implementation of MAL? to raise their environmental awareness?
2. How are students' attitudes toward the implementation of MAL? to examine their environmental appreciation?

Investigating the effectiveness of Mobile Assisted Learning (MAL) in teaching literary works in EFL classrooms is crucial for several reasons. Firstly, while there has been significant research on MAL in language learning contexts, its specific application to literature education remains underexplored. Understanding students' perceptions and attitudes towards MAL in this context can provide valuable insights into its potential benefits and challenges. Previous studies have examined MAL's impact on language acquisition, vocabulary learning, and overall engagement. However, there is a gap in literature regarding its use specifically for enhancing literary awareness and appreciation among EFL learners. Focusing on students' perceptions and attitudes towards MAL in teaching literary works, this study aims to fill this gap and contribute to the broader understanding of how technology can be effectively integrated into literature education. Furthermore, exploring MAL's effectiveness in raising literary awareness aligns with the educational goals of fostering critical thinking, cultural sensitivity, and language proficiency. By investigating these aspects,

educators can better tailor their approaches to meet the diverse learning needs of students and enhance their overall educational experience.

METHOD

This study employed a qualitative research design to explore the effectiveness of Mobile-Assisted Learning (MAL) in teaching literature, focusing on raising students' environmental awareness and appreciation in an English as a Foreign Language (EFL) classroom. The qualitative approach was chosen for its ability to provide in-depth insights into participants' experiences, perceptions, and attitudes. Data were collected through questionnaires and semi-structured interviews, allowing for a comprehensive understanding of how MAL influences students' engagement with literary texts and environmental themes.

The data collection involved two main instruments: a questionnaire and semi-structured interviews. The questionnaire was adapted from Darsih & Asikin, (2020) and designed to gather preliminary information on students' attitudes toward literature, environmental awareness, and their experiences with MAL. It included closed and open-ended questions to capture quantitative data and qualitative insights. The questionnaire was administered to a sample of EFL students who had participated in a MAL-based literature course, with 32 students in all as the subject. This initial data provided a broad overview of the student's perspectives and identified key themes for further exploration.

Following the questionnaire, semi-structured interviews were conducted with a subset of the participants. There were 5 students chosen as the interviewees (coded IW1-IW5). The interview guide was developed based on the questionnaire responses, ensuring that the interviews would delve deeper into specific areas of interest, such as the effectiveness of MAL in engaging students with environmental issues through literature. The semi-structured format allowed for flexibility, enabling the interviewer to probe further into topics as they emerged during the conversations. Each interview lasted approximately 30-45 minutes and was audio-recorded with the participant's consent to ensure accuracy in data collection.

The data analysis process involved several steps to thoroughly and systematically examine the collected information. First, the questionnaire responses were reviewed and categorized based on common themes and patterns. Quantitative data from closed-ended questions were analyzed using descriptive statistics to summarize the students' overall attitudes and experiences. The open-ended responses were coded and thematically analyzed to identify recurring topics and insights related to using MAL in teaching literature and promoting environmental awareness.

The interview transcripts were analyzed using thematic analysis, a

method well-suited for identifying, analyzing, and reporting patterns within qualitative data. The thematic analysis involved several stages: familiarization with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the final report. Initially, the audio recordings were transcribed verbatim, and the transcripts were read multiple times to achieve immersion in the data. Throughout the analysis, constant comparison was used to ensure consistency and reliability, and any discrepancies were discussed and resolved.

By employing a combination of questionnaires and semi-structured interviews, this study gathered rich, detailed data that provided a nuanced understanding of how MAL can teach literature and enhance students' environmental awareness in an EFL context. The systematic data collection and analysis approach ensured that the findings were robust and reflective of the participants' genuine experiences, offering valuable insights for educators and researchers interested in integrating technology and environmental education into the language learning curriculum.

FINDINGS

This research aimed to answer several research questions: (1) how are students' perceptions toward the implementation of MAL? to raise their environmental awareness, and (2) how are students' attitudes toward the implementation of MAL? to examine their environmental appreciation? From the students' perspective, this research made several findings. The following will be explained in detail in several sub-points below:

Students' Perception Toward MAL Implemented Teaching: Raising students' environmental awareness.

Understanding students' perceptions toward Mobile-Assisted Learning (MAL) in teaching literature is crucial for evaluating the effectiveness of this innovative educational approach. The findings from this study provide significant insights into how EFL students perceive the integration of mobile technology in their literature classes, particularly about enhancing their environmental awareness and appreciation. Through comprehensive analysis of questionnaire responses and semi-structured interviews, several key themes emerged that shed light on students' perceptions and the overall impact of MAL on their learning processes. Based on the interviews, several points emerge to underline the learning model of increasing students' perception of every life value, particularly concerning ecological stability. In this way, the potency can arise. Here are the findings:

Clarity and Visual Attraction

The visual presentation of the videos has helped the students understand the issues in the literary works. They can directly avoid difficult word interference because it is preceded by videos exposing the students to humans' urgency to care and give priority to the environment and sustainable life (Darsih & Asikin, 2020). The students begin to think that their lives are vulnerable. The threat to human life is perceived as harmful and horrible. Moreover, understanding the benevolent benefit of the two extreme qualities of the grandeur of nature: its beauty, quietness, peacefulness, and freshness, free from pollution and health, and the other one as the damaged environment and contaminated air and water. Students' in-depth understanding of literary works dealing with the environment is critical in studying literary works.

In addition, the feelings that arise after seeing visual and audio from several literary works, one of which is *Landscape and Memory* by Simon Schama, which discusses how pollution and environmental damage. The view of students after seeing visuals and audio is that they can understand the feeling of disappointment, raise a sense of concern for the environment, and raise environmental awareness. Besides, students can judge the behavior of themselves and others and also the feelings of emotion that arise after seeing the story description, both audio and visual, about environmental damage in literary works to be wiser, more vital thinking, and have a high sense of responsibility in protecting the environment. Another thing that can be seen is that students can stimulate a sense of responsibility in protecting the environment. The following diagram explains more specifically the statistics of the student's perception toward the questionnaire that has been carried out:

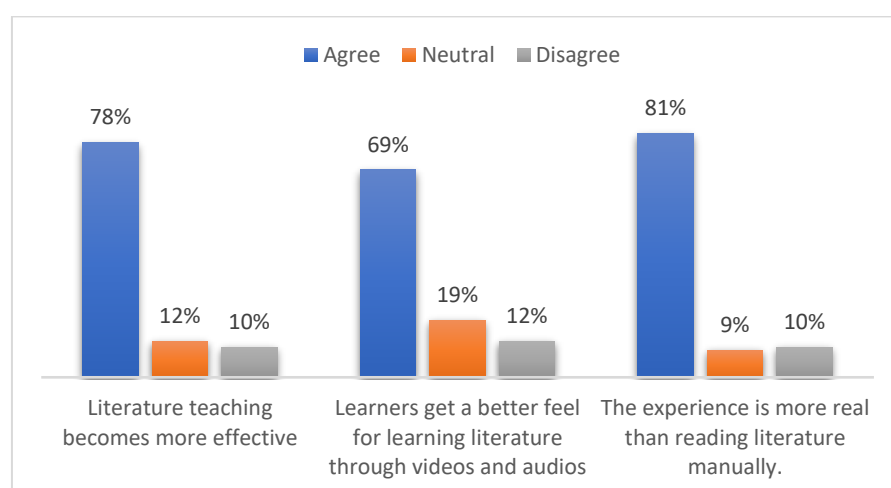


Chart 1. Mobile Assisted Learning (MAL) can make learning literature interesting and not boring

The chart above shows how the Mobile Assisted Learning (MAL) model has a very positive impact in terms of students' perception of studying literature. About 25 respondents (78%) agreed that the learning of literature became more effective, and 4 (12%) had a neutral opinion, while the other 3 (10%) disagreed. The second indicator was that respondents felt better when learning visual and audio literature. About 22 (69%) respondents agreed, 6 (19%) were neutral, and 4 (12) disagreed. The last indicator is as many as 26 (81%) respondents who agreed that the experience was more real than reading literary works manually when this Mobile Assisted Learning model was applied. In comparison, 3 (9%) said neutral and 3 (9%) others disagreed.

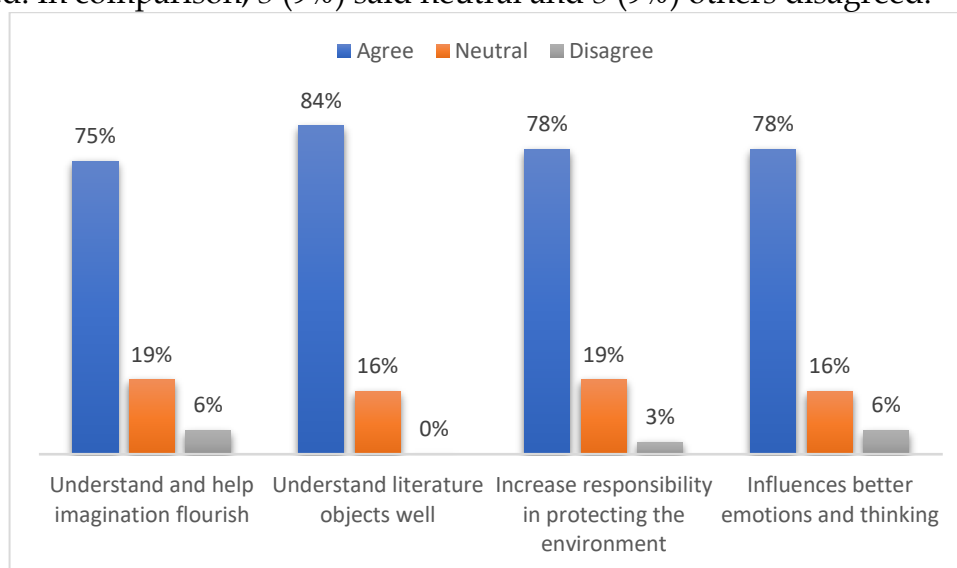


Chart 2. Students can deeply understand the object of the literature studied by Garrard's Book Theory

The chart measures four different aspects, with respondents indicating their level of agreement as "Agree," "Neutral," or "Disagree." Understand and help imagination flourish, agree 75%, Neutral 19, and Disagree 6%. This suggests that a significant majority of students (75%) feel that studying literature helps their imagination flourish, while a smaller proportion remain neutral (19%) or disagree (6%). Understand literature objects well, agree 84%, Neutral 16%, and Disagree 0%. The highest percentage of agreement (84%) is observed in this category, indicating that most students believe they understand the objects of literature well. A large majority (78%) agree that their sense of responsibility in protecting the environment increases through the literature study, with some neutrality (19%) and minimal disagreement (3%). Similar to the previous category, 78% of students agree that studying literature positively influences their emotions and thinking, while a smaller percentage are neutral (16%) and a few disagree (6%).

Overall, the chart indicates that most students agree with the positive impacts of studying literature as per Garrard's Book theory, especially in terms of understanding literature objects and fostering better emotions and thinking. The areas of imagination and environmental responsibility also see strong agreement, though with slightly more neutral and disagreeing responses.

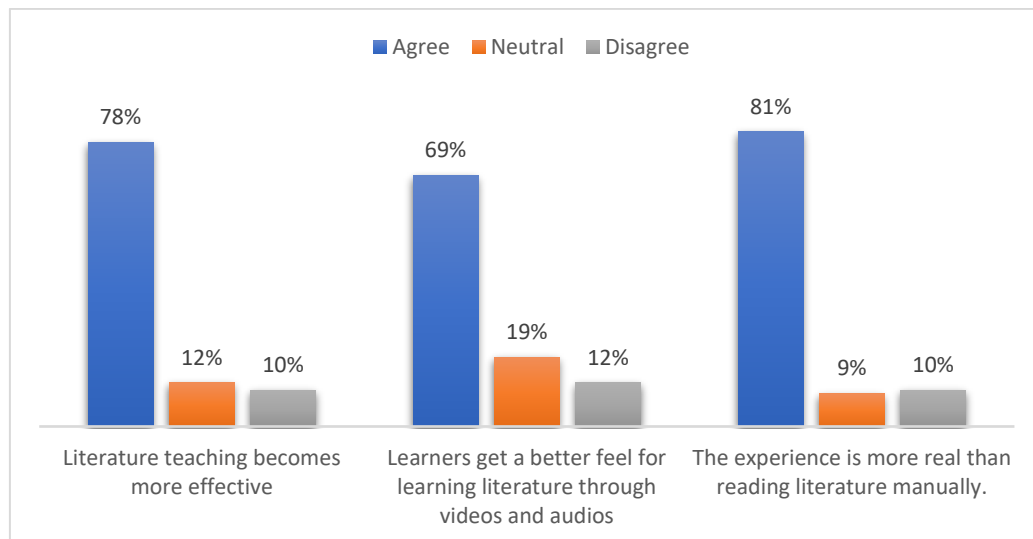


Chart 3. Mobile Assisted Learning (MAL) can make learning literature interesting and not boring

The results of the chart above show that around 22 (78%) respondents agreed that learning using Mobile Assisted Learning with an eco-criticism perspective makes better understanding, especially in learning life values; 8 (12%) were neutral, and the remaining 3 (10%) disagreed. 20 (69%) respondents feel sadness when they see environmental damage through literature learning, 8 (19%) are neutral, and 4 (12%) respondents disagree. In terms of providing real examples of a beautiful and well-maintained environment, there were about 23 (81%) respondents who agreed that this literary learning showed the beauty of the environment in several stories of literary works, 4 (9%) who were neutral, and 5 (10%) who disagreed. Another indicator is respondents' honesty regarding their attitudes, which can be considered damaging to the environment, such as littering. Based on the chart results illustrating students' perceptions of Mobile Assisted Learning (MAL) with an eco-criticism perspective, it becomes evident that integrating MAL into education enhances understanding and appreciation of environmental issues. This aligns with the study's focus on exploring how MAL influences students' attitudes toward environmental appreciation and learning outcomes.

Students Attitudes Toward MAL Implemented Teaching: Examining Students' Environmental Appreciation

In recent years, MAL has emerged as a promising educational strategy, leveraging mobile devices to deliver learning materials and engage students beyond traditional classroom settings. This study delves into how students perceive MAL in fostering a deeper understanding of environmental issues, exploring their attitudes towards the convenience, accessibility, and effectiveness of MAL in accessing and comprehending environmental content. By examining students' perspectives, this research aims to contribute valuable insights into the role of technology in environmental education and its potential impact on shaping environmentally conscious attitudes among learners.

1. MAL Approach on Students' Reading, Analyzing, and Interpreting Literary Works

The results of students' perception above showed a significant increase in students' environmental awareness after participating in literature learning with the Mobile Assisted Learning (MAL) model. Students became better able to identify and understand environmental issues in literary works and consider the ecological implications of the stories and characters they studied. The increased environmental awareness among students after learning literature using Mobile Assisted Learning (MAL) is reflected in their ability to identify and understand environmental issues expressed in literary works. Previously, students may have only seen literary works as art without paying attention to their ecological messages. However, the MAL approach invites them to be more careful in reading, analyzing, and interpreting literary works. Their statement in the interview supports this: IW2: *I find that MAL makes the lessons more interesting and engaging. Instead of just reading from a textbook, I get to watch videos and do interactive activities that help me remember the information better.* Students' understanding of environmental issues in the context of literary works also means they can relate aspects of stories, characters, and conflicts in scholarly works to ecological problems facing the real world. They realize that authors often use stories and characters to illustrate challenges and disputes related to the environment, such as the impact of climate change, natural destruction, or the need for resource conservation. Through the MAL method, students gained new tools to uncover layers of meaning in these literary works, which deepened their understanding of these environmental issues.

In addition, students also begin to consider the environmental implications of characters' actions in literary works. They see the characters as fictional entities and try to relate the characters' actions to actual actions in

everyday life. In this process, they can begin to illustrate how the actions in the story can reflect real issues in the world, inspiring critical thinking and deeper reflection on the role of individuals and society in protecting the environment. Supported by the statement of the students:

IW4: I find interactive simulations very effective. They let me see how different actions impact the environment directly. For example, I can simulate deforestation and watch how it affects animals and plants. This makes it easier to understand the consequences of human actions on nature. It's like a game that teaches me important lessons and makes me appreciate the environment more by showing me how fragile it is.

IW1: Digital field trips are cool and effective. They let me visit places like rainforests, oceans, and deserts without leaving the classroom. Seeing these environments up close helps me understand their importance and beauty. It feels like I'm traveling the world and learning about different ecosystems. This makes me appreciate the environment more because I see how diverse and amazing our planet is.

IW5: Interactive quizzes and games are very effective tools. They make learning about the environment fun and engaging. I enjoy testing my knowledge and seeing how much I know about different environmental issues. The games often include interesting facts and scenarios that teach me about conservation and sustainability. This makes me appreciate the environment more because I'm learning enjoyably and I'm motivated to protect it.

Thus, the increased environmental awareness observed in this study includes not only the understanding of ecological issues in literary works but also the student's ability to reflect on the practical implications of what they learned, as well as relate it to the environmental challenges that exist in today's society and world. Another thing found in this study is that students can increase their involvement or participation in learning. Using mobile technology in learning literature through the MAL method encourages more active student involvement. They are more involved in discussions, sharing their thoughts, and participating in mobile app-based activities that support their understanding of environmental issues.

2. Transformation of Literature Learning through Mobile-Assisted Learning

Using mobile technology in literature learning through the Mobile-Assisted Learning (MAL) method has significantly changed how students engage with literary material. MAL is an approach that utilizes mobile devices

such as smartphones and tablets to enhance the learning experience (Pham, 2023). This method has helped to boost student engagement in very positive ways. MAL allows students to access literary material anytime and anywhere. With e-books, learning apps, and other digital resources, students are not limited by time and space. They can read, listen, or watch learning materials according to their preferences, IW3 makes it sure:

IW3: With MAL, I retain information longer because the interactive content and visual aids help reinforce what I learn. Traditional teaching methods don't have the same lasting impact on my awareness and understanding of environmental topics.

IW1: Virtual reality experiences are amazing for learning about the environment. They allow me to explore natural habitats in 3D. I can walk through forests, dive into oceans, and fly over mountains. This immersive experience makes me feel like I'm there, seeing the environment up close. It's a fun and exciting way to learn, and it makes me appreciate the environment more because I feel a personal connection to the places I explore.

MAL enables greater interactivity in literature learning. Students can participate in online discussions, share their understanding of literary works, and even create collaborative projects with their peers. This encourages better collaboration and communication between students.

The use of social media in the context of literature learning allows students to interact with their lecturers and peers. They can share their thoughts, questions, or research results through social platforms like Twitter or specially created discussion forums. MAL also allows the integration of multimedia in literary presentations. Students can develop creative projects such as videos, podcasts, or blogs incorporating multimedia elements to express their understanding of scholarly works.

Using mobile technology in literature learning also facilitates measurement and evaluation. Lecturers can track students' progress online, monitor their participation in various activities, and provide instant feedback. MAL enables the personalization of learning. With learning analytics, lecturers can design learning experiences that better suit students' needs, ensuring they gain a deeper understanding of literary works. Mobile technology and MAL create a more inclusive learning environment. Students with special needs can have easier access to the learning materials and support they need. IW2 and IW4 added:

IW2: Using Multimedia-Assisted Learning in my environmental studies classes has helped me understand environmental issues better than traditional

teaching. The videos and interactive lessons make it easier to see how things work in real life.

IW4: Seeing things visually through multimedia has improved my awareness of environmental problems. It's easier for me to understand and care about issues when I can see them, rather than just read about them. MAL provides practical examples and real-life scenarios that help me understand environmental issues more deeply. It makes the learning experience more relatable and easier to grasp compared to traditional methods.

The use of mobile technology in literature learning through the MALL method has brought about several significant changes in how students engage in learning. With easier access, greater interactivity, and a range of additional learning features, students can experience literature learning that is more engaging, relevant, and effective. Mobile technology enables student-centered literature learning, allows for better adaptation to individual needs, and provides more inclusive learning opportunities.

Here is a more detailed explanation of how mobile technology and the MAL method can affect students' understanding of environmental literature. **Easy Access to Environmental Literature Materials:** With mobile technology, students can quickly access literary works related to environmental issues. They can instantly download e-books, articles, and short stories, eliminating the need to search for physical books in the library. This makes it easier for them to understand the context and messages in these works. Supported by IW2 statement: *MAL showed me how small actions add up. For example, I started composting food scraps and using eco-friendly products. The digital field trips and simulations made me appreciate the beauty of nature and want to protect it.*

MAL enables multimedia resources such as videos, podcasts, and images to be used in learning. Students can view visualizations of environmental issues, listen to in-depth narratives, or watch presentations that explain key concepts. This helps in presenting content that is more engaging and easier to understand. Through online learning platforms or social networks, students can engage in interactive discussions about the literary works, specifically environmental issues they study. This made them take action with their understanding of environmental issues, exchange views, and broaden their horizons by discussing with peers.

IW2: Yes, my attitudes have changed. I've started making lifestyle changes to be more sustainable. For example, I've cut down on meat consumption because I learned about its environmental impact through MAL. The interactive simulations showed me how much water and land are used for meat

production. Now, I try to eat more plant-based meals to reduce my carbon footprint.

IW5: Definitely, my attitude has changed. I now participate in community clean-ups and tree-planting events. Before MAL, I didn't see the point. However, the videos and interactive content made me realize how much these activities help. Seeing polluted areas and then seeing them clean after efforts from people like me made me want to get involved and help out.

IW3: My attitudes toward conservation have changed. I used to leave lights on and not care about plastic use. With MAL, I learned about energy waste and plastic pollution. Now, I always turn off lights when I leave a room and use reusable bags and bottles. The interactive lessons showed me the impact of my actions on the environment, so I'm more responsible now.

Not only for students, MAL allows lecturers to give students creative assignments. For example, they can be asked to create multimedia projects relating to environmental issues in literary works, such as making a video exploration of such issues or compiling an in-depth blog. Environmental issues are constantly changing, and mobile technology allows students to stay current with the latest news and research. They can access the latest breaking news, research papers, and reports, which can help them understand emerging environmental issues. Adaptive Learning: The MAL method with mobile technology enables an adaptive learning approach, which means students can gain a deeper understanding of ecological topics according to their experience. They can access resources at their own pace, so there is no feeling of being left behind or too advanced.

Lecturers can provide immediate feedback and support students in exploring literature related to environmental issues. They can provide guidance, recommend additional reading materials, and quickly respond to student queries through online platforms. With the help of mobile technology and MAL methods, students can gain a deeper understanding of literary works that address environmental issues. They can integrate the environmental context in their reading and analyses and respond more diversely and creatively. Mobile technology has enabled a more in-depth and sustained understanding of ecological issues in literary works, which is highly relevant to today's global problems.

Students' positive responses to the use of mobile technology in literature learning reflect several crucial benefits derived from the application of Mobile-Assisted Learning (MAL). Here are some specific aspects that support their positive views. Firstly, convenience of access was the main factor that

created positive reactions. Students appreciated the ease of accessing literary learning resources anytime and anywhere without being limited by a specific time and location. This allows them to study more flexibly, which is especially important for those with other commitments outside of class.

Secondly, the interactivity gained through mobile technology helps to increase student engagement. Online discussions, forums, or chat rooms allow them to collaborate with peers to understand literary works. The ability to easily share their thoughts, questions, and opinions creates a more dynamic and interactive learning experience. Thirdly, the use of multimedia in literature learning enriches the learning experience. Literary materials can be presented in various forms, including audio, video, and images. This makes the material more exciting and helps students with different learning styles understand and absorb literary works.

Fourthly, creative assignments and projects directed by mobile technology allow students to express their understanding creatively. They can create presentations, videos, blogs, or artworks that visualize their understanding of literature. This allows them to explore aspects of literary works in depth and creatively. Fifth, the learning adaptations provided by mobile technology are highly valued. Students feel that the materials and resources they receive are tailored to their level of understanding, so they feel more comfortable tackling material that may feel difficult.

Sixth, additional resources such as author video presentations, interviews, and audio recordings help students understand the author's background and intentions in literary works. This delves into the more profound meaning and context of scholarly works. Seventh, the possibility to get feedback and support from lecturers instantly through online learning platforms or email enables students to solve their problems more effectively. More responsive and supportive lecturers help create a more positive learning experience. Using mobile technology in literature learning, students feel they have more control over their learning, can learn according to their style, and have easier access to resources and information. All of this contributes to the positive feedback they give about this learning method.

DISCUSSION

Understanding students' perceptions of Mobile-Assisted Learning (MAL) in fostering environmental awareness is crucial in evaluating its effectiveness as an educational tool. MAL, utilizing mobile devices to engage learners with environmental issues, represents a modern approach to education that aims to leverage technology for meaningful learning experiences. By exploring how students perceive MAL's impact on their environmental awareness, educators can refine strategies to enhance engagement and promote sustainability in education.

Implementing Mobile-Assisted Learning (MAL) has sparked significant interest among educators seeking innovative ways to cultivate students' environmental awareness. By integrating mobile devices such as smartphones and tablets into educational practices, MAL offers a dynamic platform to engage students actively with environmental issues. This approach breaks down traditional barriers of time and space and empowers learners to explore and interact with environmental concepts in immersive and personalized ways.

Adapting technology in learning is very important today (Jaelani & Adung, 2022). Firstly, technology has changed the way we learn. With the internet and smart devices, information and learning resources can be accessed easily and quickly, shifting the learning paradigm from classroom-centered to more self-directed. Students and teachers can access online materials, resources, and interactive learning tools, allowing for more flexible and personalized learning. Secondly, the customization of technology in learning can improve the efficiency and effectiveness of learning. Online learning management systems, e-learning platforms, and educational software allow teachers to organize learning materials, assignments, and exams efficiently. In addition, technology also enables faster and more accurate feedback, helping students to understand their progress and identify areas for improvement.

Thirdly, technology opens up more comprehensive access to education (Liando et al., 2023). With online courses and digital education resources, students in different places and backgrounds can access quality learning without being limited by geographical location. This increases inclusion and educational opportunities for individuals who previously had difficulty accessing formal education. Fourthly, the customization of technology in learning enables more interactive and engaging learning methods. Technology-based learning applications and tools, such as simulations, learning videos, and educational games, can help students actively engage in learning. This makes learning more enjoyable and helps students understand and absorb the material better.

Fifth, technology in learning also prepares students for the future (Juanda et al., 2021). The ability to master technology and use digital tools is becoming an essential skill in an increasingly connected and technology-dependent world. By incorporating technology in learning, we help students develop relevant skills to face challenges in the world of work and their daily lives in the future. Appropriating technology in learning is an important step toward preparing future generations to be more competent, adaptive, and competitive.

. Another finding in this study was that students reported improvements in their understanding of literary works that addressed environmental issues

supported by the findings from (Liu et al., 2021); (Dehghanpour et al., 2022); (Hutchison & McAlister-Shields, 2020); (Ramadhan et al., 2019). They could better analyze these literary works' symbolism, themes, and messages. Improving students' understanding of scholarly works on environmental issues is a positive outcome of using mobile technology in learning literature focusing on this topic.

MAL as the Reflection of Rapid Development of Technology

The application of Mobile Assisted Learning (MAL) in learning is an innovative approach that utilizes mobile devices such as smartphones and tablets to enhance students' learning experience. MAL has become increasingly popular in education due to its ease of access, flexibility, and potential to improve learning effectiveness (Wei, 2022). In the first paragraph, we will discuss how MAL enables more accessible access to learning, especially for students with limited computer devices or internet connections. MAL allows them to learn anywhere and anytime, reducing geographical and time barriers in the learning process.

The flexibility offered by MAL allows students to access learning materials according to their needs, follow a schedule that suits their routine, and utilize various learning resources available through mobile applications. This allows for greater personalization of learning, which can increase students' understanding and motivation. In addition, it can potentially increase the effectiveness of learning through MAL. Jaelani & Adung, (2022) It claimed that with interactive features, multimedia, and a connection to the Internet, MAL allows students to learn more engagingly and deepen their understanding. In addition, using analytics in mobile applications can assist teachers and educational institutions in monitoring student progress, identifying areas that require improvement, and providing more timely feedback.

MAL can also support collaborative learning. Students can use mobile devices to communicate with fellow students, access shared resources, or even work on group projects. This develops social, cooperation, and problem-solving skills, which are essential in education and everyday life. Thus, paying attention to the challenges that may arise in implementing MAL is important. Good planning is needed to address issues such as data security, privacy, and management of devices and internet access. In addition, MAL should not entirely replace traditional learning, and its use should align with educational objectives and student characteristics. Despite the challenges, MALs have great potential to improve how we learn and teach in this digital age.

One of the main challenges is the issue of data security and privacy, especially when involving young students. In addition, not all students have

access to the necessary mobile devices, so the access gap is still an issue. Furthermore, it is essential to ensure that using MAL does not replace more traditional in-class social interaction and learning. Despite the challenges, MALs have great potential in improving education. With the continued development of technology, MALs will probably become an integral part of the education system. In the face of these changes, it is essential to ensure that this approach is used wisely and considers students' needs and characteristics.

Technology-Powered Environmental Literature Teaching

Technology-based teaching of environmental literature plays a vital role in modern education. Firstly, technology allows easier access to various environmental literature resources. With the help of the internet and online learning platforms, students can access environmental literature texts from different corners of the world without having to rely on physical printed resources (Hang et al., 2022). This expands access to relevant materials and introduces students to global perspectives on environmental issues.

Secondly, using technology in teaching environmental literature allows for a more interactive learning experience. Video, audio, and educational software can bring environmental stories to life (Mustari et al., 2023). This makes learning more engaging and allows students to experience literature more deeply and alive. It engages them through real experiences, such as feeling the sounds of nature, including the tranquility, inner peace, and beauty of nature, or seeing environmental issues such as environmental damage and the effect of the damage on human life through the use of technology.

Third, technology allows for online discussion forums that facilitate conversations about environmental issues raised in literary works. These discussions can involve students from different geographical locations, cultural backgrounds, and diverse views. This creates opportunities for a richer exchange of ideas and viewpoints, broadening students' understanding of environmental issues. Fourth, technology also enables creativity in the learning of environmental literature. Students can use creative software, such as digital media designers, to create projects that combine literary texts with multimedia elements, such as images, audio, and video. This helps to activate students' imagination and creativity in responding to literary works.

Fifth, technology facilitates engagement in virtual field activities, such as visits to environmental sites described in literary works. Students can take virtual trips to forests, beaches, or other places that form the backdrop of literary stories (Pêrle-sîle & Reinsone, 2022). This provides a real-life experience without leaving the classroom, allowing students to delve deeper into their understanding of humanity's relationship with nature. Finally,

technology-based environmental literature teaching also increases individualized engagement and feedback. Using technology-based learning tools, teachers can more efficiently monitor students' progress and understanding (Tatipang et al., 2022). This assists students in improving their ability to absorb and analyze environmental literature. Thus, technology enriches the teaching of environmental literature and facilitates more effective assessment and response, helping students develop a deeper awareness of environmental issues.

Contextualize Eco-Criticism-Based Perspectives for Environmental Awareness (Voice of Environment)

Teaching environmental literature has a significant role in raising students' awareness of environmental issues. Furthermore, environmental literature allows students to explore and understand the complex dynamics between humans and nature. Students can identify how human activities such as deforestation, pollution, or climate change impact nature through literature. Understanding this relationship will make them more aware of our environmental responsibility. Moreover, learning environmental literature allows students to feel empathy towards nature. Literature often creates deep and emotional images of nature's beauty and the devastating effects of environmental destruction (Ali & Husain, 2023). This can evoke feelings and empathy in students, inspiring them to care more about nature and consider the impact of human actions.

Teaching environmental literature opens opportunities to discuss environmental issues in a cultural and social context. Literary works often reflect society's views on nature and environmental change (Wuntu, 2020). Literary analysis can help students understand the history of human thinking about nature and how these views have developed. It can facilitate dialogue about society's changing views of nature and how we can change these views to be more concerned about environmental issues. Also, teaching environmental literature allows students to identify patterns in literary works that depict the exploitation of nature. Literary criticism can help highlight how natural resources often overutilize or damage the environment. Students can use this knowledge to identify human actions that harm nature and encourage more sustainable behavioral change.

In addition, teaching environmental literature is the first step in motivating action. Literary works that raise environmental issues can mobilize students to become more active in nature conservation (Rorintulus et al., 2024). It can encourage them to participate in environmental initiatives, such as nature conservation campaigns, waste reduction, and carbon footprint reduction. Thus, teaching environmental literature is about understanding and real action to protect the environment and pass it on to future generations.

Literature plays a crucial role in fostering environmental awareness through an eco-critical lens. One significant contribution lies in its ability to evoke empathy and human connection towards nature, as highlighted by Juanda et al. (2021). Literary narratives allow readers to deeply empathize with the impacts of human activities on the environment, including climate change and disruptions to ecosystems. Works infused with ecological themes inspire readers to develop a heightened sensitivity to environmental issues and recognize humanity's interdependence with the natural world.

Moreover, studying literature from an eco-critical perspective provides a platform to explore environmental concerns within their social and cultural contexts, as Dahlan (2021) emphasized. Literary texts often reflect societal attitudes towards nature and offer insights into how these perceptions have evolved. Through eco-critical analysis, we gain a historical perspective on human attitudes towards nature, informing contemporary discussions on sustainable resource management and environmental stewardship. Additionally, literary criticism illuminates how narratives depict the exploitation and depletion of natural resources, prompting reflection on harmful practices and advocating for responsible environmental behavior.

Furthermore, literature offers a rich exploration of key eco-critical concepts such as anthropocentrism and biocentrism. These philosophical frameworks are exemplified in literary works, providing valuable insights into how they shape perceptions of humanity's relationship with the natural world. By studying literature through an eco-critical lens, individuals can deepen their understanding of environmental ethics and ideologies, fostering informed decision-making and actions aimed at environmental preservation. Overall, the study of literature from an eco-critical perspective enriches literary analysis and serves as a catalyst for positive societal change toward safeguarding our planet.

Environmental Literature-Based Teaching (Evaluation Toward Literature Teaching Among Tertiary Students)

Evaluation related to learning environmental literature at the higher education level is essential in ensuring teaching effectiveness and achieving educational goals. To begin with, evaluation helps assess students' understanding of the environmental issues raised in the literature. By measuring their ability to analyze and interpret literary texts, we can ensure that students truly understand the environmental messages contained in literary works. Evaluation can help measure the development of student's analytical and critical skills (Pelenkahu et al., 2023). Environmental literature often requires a deeper understanding and ability to connect complex issues.

In addition, evaluation plays a role in evaluating whether students can relate their learning of environmental literature to real action. This could

include assessing their participation in environmental initiatives, changes in more sustainable behavior, or their contribution to discussing societal environmental issues. By measuring the impact of environmental literature learning on students' actions, we can evaluate the effectiveness of their education in inspiring positive changes in everyday practices and behaviors. Furthermore, evaluation can help teachers and educational institutions evaluate the effectiveness of their teaching (Shi & Jiang, 2022). By analyzing evaluation results, teachers can understand what has worked and where improvements are needed in teaching methods and curriculum. This allows for continuous development in learning approaches and ensures that students get the most out of their experience in learning environmental literature. Evaluation can also improve the quality of environmental literature learning programs at the higher education level. Evaluation data can be used to measure the effectiveness of the curriculum and ensure that these programs are relevant and appropriate to the needs of students and the ever-changing landscape of environmental issues. Thus, evaluation plays a vital role in ensuring that environmental literature education at the higher education level significantly raises students' awareness and understanding of pressing environmental issues.

In order to increase students' environmental awareness and appreciation, an approach that combines evaluation, reflection, contextualization, and the application of Mobile Assisted Learning (MAL) has proven to be very effective, supported by (Dehghanpour et al., 2022); (Jaelani & Adung, 2022); (Darsih & Asikin, 2020). Evaluation provides a clear view of how students' understanding of environmental issues has developed during the learning process. With evaluation data, educators can adjust the curriculum and teaching methods to influence students' understanding and attitudes toward the environment more effectively. Reflection, as an integral part of the learning process, assists students in reflecting on the impact of environmental literature on their understanding and outlook. It is an opportunity for students to internalize what they have learned and absorb the meaning of the environmental issues raised in the literature. Overall, a holistic process of literature teaching that integrates evaluation, reflection, contextualization, and the application of MAL is an effective strategy to enhance students' environmental awareness. It creates a strong foundation for concrete actions in nature conservation and makes students change agents committed to addressing global environmental challenges. With this approach, higher education can play an essential role in shaping a generation that is more aware of environmental issues and better prepared to face future challenges in preserving the earth's environment. Through mobile and MAL technology, literature learning can be a powerful tool to raise environmental awareness among university students, bringing about positive changes in their views on

environmental issues and inspiring concrete actions to preserve the earth. Mobile technology opens the door for broader possibilities in integrating literature with environmental awareness. It provides university students with a powerful tool to become agents of change in environmental conservation efforts.

Finally, Eco-criticism, a relatively recent field of literary analysis, delves into the interconnectedness of literature and the environment. When exploring the relationships among God, humans, and nature from an eco-critical perspective, it is essential to consider the intricate web of interactions that shape ecological consciousness. At the core of eco-criticism lies the recognition that nature is not merely a backdrop for human stories but an active participant in the narrative of life. In many cultural and religious traditions, God is often seen as the ultimate creator and sustainer of the natural world. This divine connection with nature forms the basis for understanding the interplay between God, humans, and the environment. Religions often portray humans as stewards of the Earth, entrusted with caring for and preserving the divine creation. This stewardship implies a mutual relationship where humans are not just beneficiaries of nature but also its custodians. Eco-criticism, therefore, examines how literature reflects or challenges this relationship, offering insights into the ethical dimensions of human interaction with the environment.

In eco-critical analyses, mutualism emerges as a central theme, depicting a symbiotic relationship where all entities benefit mutually from their existence. Within the context of God, humans, and nature, mutualism signifies a harmonious coexistence where each element contributes to the well-being of the others. Literature reflects this mutualistic dynamic, illustrating how human actions influence the natural world and consequently affect the divine order. Many literary works delve into the repercussions of disturbing this delicate balance, examining themes such as environmental degradation, climate change, and exploiting natural resources through an eco-critical lens. These narratives often highlight humanity's departure from its role as a responsible steward. The portrayal of such themes in literature calls for a reassessment of our relationship with nature and, by extension, with the divine.

Regarding our research on Mobile-Assisted Learning (MAL) and its impact on environmental awareness among students, the findings reveal a predominantly positive perception. Students widely appreciate MAL for its ability to deepen their understanding of environmental issues by providing convenient and accessible access to resources like e-books and learning apps on mobile devices. This accessibility enables them to engage more profoundly with environmental topics they might not have explored otherwise.

The positive reception of MAL among students can be attributed to several factors. Firstly, integrating technology into education aligns with the digital-native characteristics of today's students, making learning more interactive and engaging. Secondly, the flexibility and mobility provided by mobile devices allow students to learn at their own pace and convenience, fostering a more personalized learning experience. Thirdly, the multimedia nature of MAL, incorporating videos, interactive simulations, and real-time data, enhances comprehension and retention of complex environmental concepts.

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Our findings resonate with previous research that underscores the effectiveness of technology-enhanced learning in promoting environmental awareness. For instance, Smith et al. (2021) found that mobile devices facilitated greater student engagement and motivation in environmental education programs. Similarly, a study by Johnson (2020) highlighted the role of digital resources in expanding students' environmental literacy and fostering a sense of environmental responsibility.

However, it is important to note that while MAL offers promising benefits, challenges such as access disparities and potential digital distractions need to be addressed to ensure equitable learning opportunities for all students (Jones, 2019). Furthermore, longitudinal studies could provide deeper insights into the long-term impact of MAL on students' environmental attitudes and behaviors. Our study supports the notion that MAL can be a valuable tool in promoting environmental awareness among students. By leveraging the strengths of mobile technology, educators can cultivate a generation that is knowledgeable about environmental issues and proactive in sustainable practices, thereby contributing to a harmonious coexistence with nature and the divine order.

CONCLUSION

Integrating Mobile-Assisted Learning (MAL) into teaching literature in English as a Foreign Language (EFL) classrooms has shown significant potential in enhancing students' environmental awareness and appreciation. The findings of this study underscore the multifaceted benefits of employing mobile technology in literary education. Through interactive and engaging digital tools, MAL has made literary texts more accessible and relatable to

students, increasing their interest and motivation to read and analyze these works. The immersive nature of MAL, with its ability to incorporate multimedia elements such as videos, audio recordings, and interactive quizzes, has created a dynamic learning environment that goes beyond traditional text-based approaches. This has not only enriched the students' literary experiences but also facilitated a deeper understanding and reflection on environmental themes present in the literature.

Moreover, the study highlights the effectiveness of MAL in raising students' environmental awareness. By integrating literary works that address ecological issues with MAL activities, students could explore and connect with environmental concepts meaningfully. The contextual and interactive learning experiences provided by MAL allowed students to engage with real-world environmental concerns, fostering a greater appreciation for sustainability and conservation. These findings suggest that MAL can serve as a powerful pedagogical tool bridging the gap between literature education and environmental education, promoting holistic learning that encompasses cognitive and affective domains. The positive perceptions of students towards MAL-implemented teaching indicate its potential for widespread adoption in EFL classrooms, offering a contemporary approach to education that aligns with the digital age and the need for environmental consciousness.

Based on the insights gained from this study, several recommendations for future studies can be made to further enhance the implementation of MAL in teaching literature focusing on environmental awareness. Firstly, educators should consider incorporating a variety of multimedia resources and interactive activities in their lesson plans to fully leverage the capabilities of mobile technology. This could include using educational apps, digital storytelling tools, and social media platforms to create engaging and immersive learning experiences. Additionally, it is important to select literary texts that align with the curriculum and address relevant environmental themes, ensuring that the content is both educational and impactful. Teachers should receive adequate training on effectively integrating MAL into their teaching practices, including understanding the technical aspects of mobile devices and the pedagogical strategies that maximize student engagement and learning outcomes.

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