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Research Article

Nurturing Young Minds: Raising Environmental Awareness Through Digital Media and Education

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Abstract

This research aims to empower young people by enhancing their awareness of environmental issues. Employing a learning ecology framework and a narrative inquiry approach, the researchers collaborated with lecturers from a private university in Yogyakarta, asking them to engage students in environmental learning and classroom activities that promote ecological awareness. This includes integrating ecological literacy into environmental education and incorporating the role of digital media and technology to enhance learning outcomes, especially in Content and Language Integrated Learning (CLIL) classes. The present study also examines the use of digital media as a medium to recognize and challenge environment issues around them. Adopting a descriptive qualitative approach, the researchers explored the students' experiences regarding the use of digital media in speaking classes. Furthermore, data sources were primarily collected from students' assignments, projects, reflection notes, questionnaire, and interview transcripts. The findings revealed three key aspects. Firstly, this research uncovers how students perceive the use of technology in addressing waste management issues in their surroundings. Secondly, it explores the classroom activities and reflections that emerge when students engage with environmental-themed digital media. Thirdly, the study highlights that these classroom activities, assignments, and projects increase their environmental values and awareness.

Keywords: Environmental Education, Young Adults, Digital Media, Technology

INTRODUCTION

The digital revolution has provided vast amounts of information and transformed the way we communicate with each other since the Covid-19 pandemic (Brameswari et al., 2023). Recently, young adults have increasingly preferred to communicate and deliver issues through digital platforms such as Youtube, Instagram, TikTok, and X (previously known as Twitter). The power of image and storytelling presented through digital media may also evoke emotions and create meaningful connections with young adults in engaging ways. As a result, this approach can make environmental learning more impactful, relatable, and effective. Researchers argue that integrating digital media in the classroom to raise awareness of environmental issues is effective since it reaches wider and global audiences. Therefore, this strategy can bridge local or national environmental concerns into a global discussion.

Environmental problems in Indonesia, precisely in Yogyakarta, require immediate attention and action. One crucial issue is the waste problem that floods the streets in Yogyakarta, causing various significant environmental effects. Regardless of these challenges, this topic has not been extensively explored in recent academic research, particularly from a learning ecology standpoint. Moreover, researchers in Indonesia give little consideration to the role of higher education in integrating digital media and ecological literacy to nurture young adults' awareness. Essentially, this issue is important to discuss because it will highlight the solution the young adults offer to combat environmental issues and take action in their community. Banjo & Obun-Andy highlights that environmental education and media contribution are important to increase someone's environmental awareness (Banjo & Obun-Andy, 2023). Therefore, to provide an authentic contribution to the academic field, a study on integrating digital media and ecological education is required.

In addressing these issues, this study aims to unveil how students perceive the use of technology in tackling waste management issues in their surroundings. Secondly, it explores the role of digital media and educational technology in supporting environmental education and fostering sustainable practices. Thirdly, the study highlights students' commitment and creativity in promoting environmental awareness, as reflected in their assignments, projects, lecturer's notes, and students' reflection journals. According to Widhiatama and Brameswari (2024), integrating technology through gamification in the classroom is the keys to promote students' students' confidence and to improve their engagement and potentials. Therefore, employing digital media in environmental-themed learning activities is prominent to encourage students to think critically and actively participate with environmental issues. In addition, it is essential to nurture, support, and accompany young adults to become environmentally aware individuals who can meaningfully contribute to our shared home, the Earth.

LITERATURE REVIEW

Review of Related Theories

By employing narrative inquiry approach adopted from Karataş and Yüce (2024), the research will dismantle participants' perception and experiences regarding

the development of their environmental awareness. Integrating ecological literacy into environmental education while incorporating the role of digital media and technology is important for enhancing the learning outcomes. Damşa et al. argues that "the learning ecology framework draws on ecological perspectives as well as constructs developed from sociocultural and activity theory" (Damşa et al., 2019). Similarly, Widhiatama and Brameswari (2024) argue that the use of technology in teaching and learning settings "can make education more meaningful and engaging for teachers and students."

The intersection of environment education and digital media holds principal importance because digital media play crucial roles in shaping young adults' environmental awareness. Digital tools can improve students' awareness of environmental issues, empowering them to engage more actively with sustainability topics. Livingston underlines that digital media in language learning offers pathways for deeper connection among individuals and the natural world (Livingston, 2022). Similarly, Lin and Ardoin highlight how various technologies, namely location-based mobile games, and augmented and virtual reality, contribute to the increased awareness and engagement with nature (Lin & Ardoin, 2023). This insight reveals how integrating digital media into environmental education may influence young people's perspective and awareness on environmental issues.

The use of digital media, games, social media, and virtual reality is particularly significant since they mostly "used by teens for communication, education, and entertainment" (Chassiakos & Stager, 2020). By expanding the concept of ecological literacy, learning ecology perspective is pivotal to understand how lecturers can utilize a variety of digital media to help students identify the environmental issues in their surroundings, especially in the issue related to waste management. As Ismail states that young adults' environmental awareness may grow through interaction with various teaching resources and settings, fostering the development of their interest, competence, and identity through social media or digital platforms (Ismail, 2024). This central theme provides valuable insights that highlights the role of the young adult learners as active learning participants, empowering them to take real action in advocating environment sustainability. Furthermore, this study offers new contributions to environmental fields as the present study's topic has not been broadly discussed in Indonesia.

Review of Previous Studies

As it is mentioned above, the environment condition and awareness level in Yogyakarta are concerning. The growing waste management crisis due to the full capacity of the final processing site has caused various problems. Rukmorini highlights that this issue does not only give impact to the resident's economy but also pollute the environment (Rukmorini, 2024). Various scholarly researches have also considered to emphasise the importance of addressing this issue. Lin and Ardoin (2023) highlight "…the critical role of family conversations and shared digital technologies in supporting environmental learning". Similarly, Zoghbi and Lambrechts underline the role of higher education in preparing young people to adopt sustainable lifestyles and workplaces through critical, innovative, and

collaborative processes (Betour El Zoghbi & Lambrechts, 2019). Furthermore, the other two studies also note that integrating art and media in education will not only "enhance environmental awareness among students but also encourage them to actively participate and become proactive agents of change (Bentz & O'Brien, 2019; Widhiatama & Brameswari, 2024).

However, the previous studies did not specifically discuss how digital media and education can be integrated promote environmental awareness among young adults in Yogyakarta. Besides, the present study also uniquely integrates ecological literacy in English Conversation class and chatbots to inspire young adults to lead the change. Furthermore, emphasizing the role of higher education institution pioneering young adults' environmental consciousness can invite and inspire other institutions to adopt similar program. In addressing this niche, this study aims to make significant contribution to the currently emerging field of environmental studies, particularly by exploring the integration of digital media in education to empower young adults as a proactive agent.

METHODS

This section consists of five parts, namely: 1) Design, 2) Participants, 3) Data and Sources of Data, 4) Data Collection, and 5) Data Analysis. The first part of this section describes the type of the research, including the research setting and the treatments applied in this research. The second part highlights the research's participants, outlining the research population and sampling techniques. The third part explores the types of the data and their sources. The fourth part provides the stages and procedures in collecting the data. Finally, the last part analyses how the collected data were analysed and how the results are presented in the findings and discussion section.

Design

The study was carried out to enhance young adults' environmental awareness through the integration of digital media and environmental education in Critical Listening and Speaking classes. To achieve this objective, the researchers collaborated with lecturers from English Education Department at a private university in Yogyakarta, engaging students in environmental learning activities designed to promote ecological awareness. These activities integrated ecological literacy with digital media tools to enrich students' learning experiences and improve educational outcomes.

This research employed descriptive qualitative method, which allowed the researchers to explore, analyse, and interpret students' perceptions and reflections in a classroom setting. The data were identified to unveil the patterns related to students' environmental awareness, their willingness to communicate the issue effectively, and pedagogical potential of digital media and technology in fostering environmental awareness.

Participants

The population of this research was the second semester students from the English Department classes, aged between 19 and 21 years old. A total of 53 participants from the speaking classes contributed in this research. Before they participated in this research, the students had already given their consent. In this research, the participants completed the assignments, tests, reflections, and project to unveil the variance in their environmental awareness and willingness to speak. As part of the treatment, the participants joined one lesson per week for eight weeks (two months) after they took the pre-test questionnaire. After the final session, the participants completed the post-test to measure the changes in their level of environmental awareness after the implementation of the treatments.

Data and Sources of Data

The main data and source of this research are students' tasks and assignments, projects, reflection notes, questionnaire, and interview transcripts. This research employed various data and sources to gain a comprehensive and complete findings of students' learning experiences and level of environmental awareness. The data collected from students' task, assignments, and projects were used to observe how they presented environmental topics within their language classroom activities. Students' reflection notes and interview transcripts provided further insights into their responses, opinions, and challenges in the employment of digital media and chatbots in language classroom. Meanwhile, the results of the questionnaires supported the findings by unveiling the changes in students' environmental awareness. Moreover, the students' personal data will be kept confidential and their names will be replaced with pseudonym to maintain anonymity.

Data Collection

The data were gathered through documentation techniques, including the lecturer's observation notes, students' individual assignments involving speaking practices using chatbots, lecturer's notes, students' reflection notes, and interview transcripts. After the lecturer conducted the treatments, the researchers distributed questionnaires via Google Forms covering open ended questions to examine students' level of environmental awareness. To further examine students' experiences with digital technology, the study adopted a narrative inquiry approach from Karataş and Yüce (2024). Additionally, Creswell's pre-experimental research design was applied, in which participants completed a pre-test activity before receiving the treatment (Creswell & Creswell, 2017).

The treatments were managed at the end of the semester, after students had completed the final treatment related to learning ecological framework and digital media integration. Purposive sampling was utilised to purposefully select participants and the setting of the study, enabling the researchers to identify and comprehend the core issue of this research. The use of various data sources is beneficial for data triangulation, which ensure the validity of the findings. Furthermore, the researchers also observed the teaching and learning activities for more or less two months to

capture students' participation in classroom activities that involved digital media in an environmental-themed discussion.

Data Analysis

In the data analysis process, the researchers conducted five main steps. First, the researchers identified the problems and objectives, then conducted a comprehensive review of related studies. Second, the researchers developed the research design, identified the participants, and designed the classroom activities that integrated digital media and technologies. At this stage, the researchers also designed assignments, projects, and reflection questions, which incorporated digital media to present ecological concept interactively. At the end of the eight-week implementation of digital media, the participants wrote their reflective notes to share their perception, experiences, and the impact of digital media towards their environmental awareness. Furthermore, the participants took a questionnaire via Google Forms to share their learning experience and describe the changes in the level of their environmental awareness. Third, the researchers analysed the collected data using the concept of ecological literacy and narrative inquiry approach to support and validate the findings. Fourth, the researchers presented the findings that highlighted the role of digital media to enhance young adults' environmental awareness and their creative strategies to solve the environmental problems. The findings then interpreted, analysed, and discussed in relation to ecological literacy and the CLIL framework. Furthermore, the present research was concluded by presenting the summary of the main findings along with some suggestions for future researchers.

RESULT AND DISSCUSSION

This section has three main parts that highlight students' perception on the use of technology in discussing the issues related to environment, students' engagement with environmental-themed digital media, and the impact of the employment of digital media on students' environmental awareness level. Using narrative inquiry approach, the researchers explored and identified students' stories and experiences related to environmental problems. Furthermore, the students' situations and changes in attitude provided important insights into their personal growth and awareness with ecological issues (Haydon & van der Riet, 2017).

Students' Perception on the Use of Digital Media in Addressing Waste Management Issues

The results from the research data—students' reflection, assignments, interview, and class room observation—unveil that most students recognized the use of digital media as a meaningful approach to help them speaking confidently and engaging method to be aware of some environmental issues, especially in Yogyakarta. At the beginning of the semester, many students thought that environmental and waste problems around them were communal problem that should be handled by the government. It can be seen from one of the participants' statements that highlight his perspectives towards environmental issues in Yogyakarta.

Before this class, I had a basic understanding of environmental issues. I knew that pollution and climate change were serious problems, and I tried to recycle, save water, and avoid littering. However, I didn't think much about how my daily choices—like energy use, transportation, or consumption—impacted the environment. (Jozeph, Questionnaire Survey, 2025)

Before studying in this class, I thought protecting the environment wasn't really my responsibility. I knew it was an important issue, but I didn't take it very seriously. (Tya, Questionnaire Survey, 2025)

From the reflection above, it can be seen that before students engaged in the environmental-themed classroom activities they have lower awareness to environmental problems around them. Students also state that they think that it is not their personal role in protecting the environment and have no idea whether their actions may bring negative impacts to the environment.

Nevertheless, after taking parts in the classroom activities that integrated digital media, their understanding and awareness increased. The use of digital media and the curated environmental videos "makes environmental topics more engaging and relatable. Additionally, communicative activities grounded in CLT principles facilitate interactive learning and stimulate discussions on ecological concerns (Hasrina et al., 2024).

Sometimes TikTok helped me a lot because saving environment videos passing on my for you page a lot, and I watched it until the end. (Aulleta, Questionnaire Survey, 2025)

The video explanations were most helpful for me. Because from video or audio, I find it easier to understand the problems and solutions, instead of reading. (Tya, Questionnaire Survey, 2025)

Youtube videos, because it has an animation or image that can help me to understand better. (Adjie, Questionnaire Survey, 2025)

From the students' statements above, it can be seen that the use of digital media and environmental education during the treatments can help students "conveying information, building understanding, improving skills, and enabling sustainable actions" (Buchanan et al., 2018; Sahoo et al., 2024). As a result, students started to be familiar with environmental issue as a communal and social responsibility that required collective awareness and real action from each individual. This change depicts students' ecological literacy that has developed and learners have connected with environmental problems. In addition, digital media also fostered students' critical thinking and creativity in exhibiting solutions to several discussed environmental problems. It can be seen from one assignment mentioning that to resolve the textile problem she can make crafts out of her old clothes or use it as the door mat (Sandi, Assignment, 2025). The statement illustrates how digital media foster not only understanding the materials but also allowing them to link the knowledge to their daily lives.

In conclusion, students' reflection indicated that the integration of digital media in speaking classes allowed them to relate academic discussions with the real-world contexts. Through the designated activities such as creating videos, tasks and

assignments, students' reflection, and interview, students showed their motivation in contributing and expressing their ideas as well as proposing innovative solutions.

Students' Engagement with Environmental-Themed Digital Media

The use of digital media became a key component that supported students' environmental awareness. The curated videos allowed students to find information related to the waste management system, environmental awareness, and sustainable living in an engaging teaching and learning environment. Data from lecturers' observation and students written response to the videos reveal that the information presented in the videos encourage them to protect the earth. From a video assignment about "Slow Food," Komang (Assignment, 2025) confirmed that,

The video "Our Impact – Slow Food" explains how the Slow Food organization protects local food and the environment. Slow Food also builds school gardens to teach children how to grow their own food. Their goal is to create a world with good, clean, and fair food for everyone. (Komang, Assignment, 2025)

According to the answer of her assignment, the video has opened up her eyes that conducting slow food can create a better environment, produce sustainable food, and empower local farmers. The chosen video also enhancing students' critical thinking since after watching the video, they need to give their comments, criticism, and propose possible action to solve the environmental issue. Similarly, Kazazoglu emphasizes that environmental education promotes greater engagement with environmental issues, stimulates critical thinking, and enhances a sense of responsibility (Kazazoglu, 2025).

The class activities that employed digital media unveiled that students perceived the selected videos as enjoyable and the illustration helped them to understand the issue better. Furthermore, "the videos were especially helpful because they showed real-life examples of environmental problems and solutions" (Atta, Questionnaire Survey, 2025).

Digital tools that helped me most in understanding is video, in this class we usually use video from YouTube to educate us even better. I like videos more because it contains cool visuals or cute animations and audio to help me understand. (Cia, Questionnaire Survey, 2025)

The students' statements above stress that using videos from Instagram reels made the class activities more relatable, since the content discusses the environmental context in Indonesia, especially in Bali and Yogyakarta. This has made students showed their reaction in positive tone and deepened their understanding of environmental issues. In line with Hasrina et al. (2024), the present study also proves that the integration of CLIL is effective when it is combined with environmental digital media content, therefore enhancing students' ecological awareness. In conclusion, students' engagement with environmental-themed digital media depicts the potential of digital media to bridge ecological education in speaking classes.

The Impact of Digital Media and Environmental-Themed Activities on Students' Environmental Awareness

Reflecting on the application of narrative inquiry approach and learning ecology framework, this research found that the integration of digital media and environmental-themes activities on students' environmental awareness had substantial impact on students' environmental awareness. The analysis of students' reflection, students' assessment and projects, lecturer's notes, and post-test questionnaires revealed two main points: enhanced environmental learning and responsibility, strengthened creativity, and encourage students to take real actions to save the earth.

The first point unveils students' awareness of their roles in addressing environmental problems, namely climate change and waste management problems. The data showed students' personal accountability emerging from classroom activities such as recording video reflection, creating posters based on selected videos, writing reflections, and producing eco-themed sketch. These assignments assisted students connect learning ecology framework with real actions, which aligns with the Ecological literary principle. It emphasizes the intertwined between human being and their environment, which also helps students learned that environmental change begins with small, consistent actions. It can be seen from students' statements below.

After doing this activity, I understand more about how important my actions are for the environment. Before, I thought small actions didn't matter much. But now I see that even little things, like picking up trash or using less plastic, can make a big difference! Especially when many people do them together. A clean, healthy environment makes life better for everyone. Now, I feel more responsible and motivated to keep doing my part and to remind others to care too. (Cia, Questionnaire Survey, 2025)

After participating in this activity, I realized that my role in protecting the environment can go beyond personal habits. (Atta, Questionnaire Survey, 2025)

The quotations above depict students' environmental awareness has increased after participating in the designated classroom activities. By participating in a class project, students also showed their real actions in taking care of the environment. Therefore, their perception and commitment in maintaining the environment are increasing. Moreover, they started to realize that taking care of the environment around them does not only help themselves but also many people (Kenny, Questionnaire Survey, 2025). At the same tone, Ahmad (Questionnaire Survey, 2025) argues that his paradigm has shifted from merely avoiding harm to the nature to giving contribution to solve the problems. Furthermore, he finds out that the treatments have made him feel a greater responsibility to educate himself and others on environmental issues.

The second point highlights that the use of digital media in speaking classes encouraged students to collaboratively working in groups to produce environmental projects, which required idea exchange, social interactions, and communal work. These activities do not only strengthen their environmental awareness but also developed a sense of responsibility to protect the environment around them. As a result, students began to view environmental issues does not only merely as academic

tasks or assessments but as real challenges and responsibility requiring communal collaboration.

Yes, there was an assignment where we should give evidence of "are we really taking care of the earth by actions?" instead of talking and giving advices without showing any particular actions. From there I got the courage to make myself care because my friends are doing the same thing that help the environment. (Cia, Questionnaire Survey, 2025)

With the technology that's getting improvement day by day, and the idea of us, we can make something out of used materials to be something even better. (Aulleta, Questionnaire Survey, 2025)

The statements above showed that the used of digital media and environmental-themes activities have triggered their creativity in finding creative and real solution to take care of the earth. Furthermore, they were also motivated to conduct the action because the students were supporting to each other to perform the actions. Importantly, students will continue their actions and habits they already do during the treatments.

Furthermore, digital media also encourage students to demonstrate innovative solutions, take real action, and give contribution that help to keep the sustainability of our environment.

I want to continue reducing single-use plastics, using public transportation more often, and supporting local and eco-friendly products. I also want to share what I've learned with others to help raise awareness in my community. (Jozeph, Interview Notes, 2025)

Of course. I will continue my actions and habits that I already do before. But, I'm interested to try vermicomposting because my sister told me that she ever do this project on her school at SMAN 1 Yogyakarta, and every group have different results. I think it's great that a lot of school/college in Yogyakarta do the same thing. It can helps to solve about trash problem in Yogyakarta. (Putri, Questionnaire Survey, 2025)

These findings resonate with the present study that highlight the shift from being aware into taking real action. It can be seen that students do not only express their creativity but also develop responsibility to maintain the environment. By participating in activities that integrate digital media with ecological literacy, students may show their awareness into meaningful actions, mirroring their commitment and struggle in a deeper commitment to the environment. These commitments also unveil students' ecological identity, which allows a profound exploration of personal and shared experiences over time, emphasizing the significance of these narratives in shaping identities and practices within educational contexts (Karataş & Yüce, 2024).

CONCLUSION

The implementation of digital media in this research has proven effective in fostering students' environmental awareness after receiving the treatments. Through the integration of YouTube videos and Instagram reels, students were able to point out and explore various ecological issues in their surroundings, particularly in Yogyakarta. The use of digital tools created an interactive and student-centred

learning environment where students could collaborate, participate, reflected, and expressed their ecological concerns confidently. The findings from the questionnaire also revealed students' deeper understanding of environmental problems and their commitment to take action and preserve the environment. These insights play an important part in emphasizing the application of digital media to highlight critical engagement and reflection on environmental issues in speaking classes.

In conclusion, this study demonstrates that employing digital media in speaking classes can transform traditional classroom practices into more dynamic and reflective learning experiences. Furthermore, it contributes new perspectives to the integration of the digital media in environmental education, emphasizing the necessity of a balanced approach that integrates language skills with ecological-themed digital media to empower students as environmentally communicators and agents. Following the conclusion of this research, a recommendation is suggested for lecturers and educators to consistently implement this method so that all students may have access to environmental education.

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