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Exploring Behavioral Dimensions of Hybrid English Learning with Eco-Context in Higher Education

Akhmad Subkhi Ramdani[1]; Endang Iryani[2]; Rismala Sri Hariaty[3]; Rinto Rivanto[4]; Deni Iskandar[5]
[1,2,3,4]*Universitas Mohammad Husni Thamrin, Jakarta Timur, Indonesia*
[5]*Queen's University Belfast, Northern Ireland, United Kingdom*
[1]*Correspondence Email: subkhi.ramdani88@gmail.com*

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Abstract

The rapid expansion of digital technology has transformed English language education and increased the adoption of hybrid learning in higher education. At the same time, universities are expected to integrate sustainability and global citizenship into their curricula. This study examines students' attitudes and learning behaviors toward hybrid English learning that incorporates environmental and sustainability issues. Using a quantitative descriptive survey design, data were collected in 2024 from 109 undergraduate students at a university in Jakarta, Indonesia. An online questionnaire measured three constructs: attitudes toward hybrid English learning, hybrid learning behaviors, and learning behaviors in environmentally integrated English instruction. Data were analyzed using Cronbach's alpha, Percent of Maximum Possible (POMP) scores, descriptive statistics, and Pearson correlation coefficients. The findings revealed very high attitudes toward hybrid English learning (M = 82.55), high levels of hybrid learning behavior (M = 79.78), and high engagement in English learning integrated with environmental issues (M = 81.03). The study demonstrates that the integration of sustainability themes strengthens student engagement, technological literacy, critical awareness, and ecological responsibility. These findings suggest that hybrid English learning can serve as an interdisciplinary pedagogical model that connects language development with sustainability literacy and global citizenship in higher education.

A. Introduction

The emergence of artificial intelligence and advanced digital technologies is disrupting higher education on an unprecedented scale. Skills that were considered sufficient only a decade ago are rapidly becoming obsolete as technological innovation continues to reshape the nature of work and human interaction (Okoye et al., 2022; Alenezi, 2023). Universities worldwide now face increasing pressure to prepare graduates for challenges that do not yet fully exist, requiring educational systems to anticipate future competencies rather than merely respond to present demands (Wang et al., 2024; Mohiyeddini, 2024). This transformation has created a significant gap between traditional educational practices and the competencies required in an increasingly digital, interconnected, and uncertain world (Alenezi, 2023; Wang et al., 2024; Agusnaya et al., 2024).

E-learning has emerged as a strategic approach for transforming higher education by expanding access to learning opportunities, overcoming geographical barriers, and supporting more inclusive forms of knowledge and skill development (Tega & Hod, 2021; Bashir & Lapshun, 2024; Mbaidin, 2023). The integration of digital learning environments has also encouraged institutions to modernize pedagogical practices and respond more effectively to the demands of contemporary society (Andriani et al., 2018; Hidayati et al., 2021; Imamah et al., 2020). In this changing educational landscape, the development of innovative and globally relevant approaches to English instruction has become an urgent academic and educational priority.

Despite the advantages of digital learning, fully online instruction often fails to provide the interaction, scaffolding, and immediate feedback required for effective language acquisition. Although e-learning offers flexibility and accessibility, students frequently encounter difficulties in developing communicative competence, conceptual understanding, and higher-order thinking skills (Lo et al., 2025; Chen et al., 2022; Wu et al., 2020). This challenge highlights the need for pedagogical models that preserve the flexibility of digital technologies while maintaining meaningful interaction and cognitive support in English language learning.

Hybrid learning, which combines face-to-face instruction with e-learning components, has emerged as a promising response to this challenge. Studies show that hybrid learning can improve student engagement, comprehension, and academic outcomes, particularly

in subjects requiring conceptual depth and active participation (Durand et al., 2019; Lajis et al., 2019; Prahani et al., 2020). Advances in educational technology and digital media further enhance hybrid learning by expanding access to resources and facilitating interactive environments (Buzov, 2014; Suryanda et al., 2016). Research also indicates that well-designed instructional platforms can strengthen technological literacy, interaction, and active learning behaviors (Afifah & Retnawati, 2019; Best & MacGregor, 2017; Cybart-Persenaire & Literat, 2018). However, most studies focus on technical implementation and generalized outcomes rather than on how thematic content integration shapes students' attitudes and learning behaviors.

Another important strand of research highlights that language learning becomes more meaningful that language learning becomes more meaningful when connected to authentic and globally relevant issues. Integrating real-world themes into English instruction can enhance motivation, critical thinking, and communicative engagement (Olinto et al., 2018; Ross, 2017; Shinyaeva et al., 2019). Integrated learning approaches also support higher-order cognitive processes by enabling students to apply language skills in meaningful contexts (Ibrahim & Harun, 2017; Khoiriyah & Husamah, 2018). Environmental sustainability and the Sustainable Development Goals (SDGs) have emerged as powerful thematic frameworks for English learning, allowing students to develop linguistic proficiency alongside ecological awareness and social responsibility (Garside, 2024; Namaziandost et al., 2019; Nkaizirwa et al., 2021).

Despite advances in both hybrid learning and sustainability-oriented language education, their intersection remains insufficiently explored. Previous studies have generally examined hybrid learning effectiveness, instructional media, and technology-enhanced learning environments (Durand et al., 2019; Lajis et al., 2019; Prahani et al., 2020), while environmental content integration has been explored within sustainability-oriented language education (Garside, 2024; Namaziandost et al., 2019; Nkaizirwa et al., 2021). Few studies have explicitly investigated how hybrid English learning that integrates environmental issues influences students' attitudes and learning behaviors in higher education. What remains unclear is how technology-driven and interdisciplinary English learning environments can simultaneously strengthen linguistic competence, learner engagement, and sustainability literacy.

To address this limitation, the study investigates students' attitudes and learning behaviors in a hybrid English learning environment that integrates environmental

sustainability issues. By examining the interaction between pedagogical delivery and thematic content, the study provides empirical evidence on how interdisciplinary learning experiences shape learner engagement and educational outcomes in higher education. The study contributes to English language education, hybrid learning scholarship, and sustainability literacy by connecting these domains within a single analytical framework.

Building upon this contribution, the study advances a novel interdisciplinary perspective by positioning environmental sustainability, particularly SDG-related issues, as an integral component of hybrid English learning design. Unlike prior research that examined hybrid pedagogy in isolation or treated sustainability themes as peripheral content, this study establishes their deliberate integration as a central pedagogical strategy. This study therefore aims to describe and analyze students' attitudes and learning behaviors toward hybrid English learning that embeds environmental and sustainability issues, thereby offering an empirically grounded framework for innovative and globally responsible English language instruction in the 21st century.

B. Method

This study employed a quantitative descriptive survey design (Mahendran et al., 2022) to describe and analyze students' attitudes and learning behaviors toward hybrid English learning integrated with environmental and sustainability issues. This design was appropriate because the study aimed to examine response patterns in a natural educational setting rather than to test causal relationships. The research involved 109 undergraduate students enrolled in bachelor's degree programs at a university in Jakarta, Indonesia. All participants had direct experience with hybrid English instruction combining face-to-face and online learning activities. Participants were recruited voluntarily through university communication channels and social media announcements.

Data were collected in 2024 using an online questionnaire administered through Google Forms. The instrument consisted of three five-point Likert scales developed through a literature review and refined through expert validation to ensure clarity and relevance (Sung & Wu, 2018). The first scale comprised eight items measuring students' attitudes toward hybrid English learning, the second included ten items assessing hybrid English learning behaviors, and the third contained five items evaluating learning behaviors in English instruction integrated with environmental issues. All items were rated from 1 (strongly disagree) to 5 (strongly agree). The questionnaire was piloted prior to the main survey to confirm item clarity and coherence.

Responses with missing data were excluded, and the remaining data were coded numerically. Internal consistency was assessed using Cronbach's alpha (Englert & Plimmer, 2019), yielding satisfactory coefficients for attitudes (α = 0.87), hybrid learning behaviors (α = 0.89), and environmentally integrated learning behaviors (α = 0.84). Composite scores were converted into Percent of Maximum Possible (POMP) scores using the formula:

$$\text{POMP} = \frac{(\text{Observed Score} - \text{Minimum Possible})}{(\text{Maximum Possible} - \text{Minimum Possible})} \times 10$$

Scores were interpreted using five categories: very low (0–20), low (21–40), moderate (41–60), high (61–80), and very high (81–100). Descriptive statistics (means, standard deviations, frequency distributions) were calculated for each construct. Pearson correlation coefficients were also computed to explore relationships between students' attitudes and learning behaviors, with interpretation guided by established attitude behaviour frameworks to provide conceptual grounding and support replicability.

Ethical principles were strictly observed. Participants provided electronic informed consent, participation was voluntary, anonymity and confidentiality were guaranteed, and all data were stored securely and used solely for research purposes.

C. Results and Discussion

The results of this study indicate that the attitudes of students who carry out hybrid learning are already in the good category. This is because the implementation of hybrid English learning has been running for a long time, so students have started to get used to it and have an impact on good attitudes with a very high score category. The complete results related to the attitude of hybrid English learning in students can be seen in Table 5. The highest score was obtained in item number 5, which is related to LMS being useful in facilitating English lectures.

1. Results

a. Important of attitudes in hybrid English learning

The evaluation of student attitudes toward hybrid English learning reveals a "Very High" category with a total score of 82.55 (Scale 0-100). Table 1 provides the itemized distribution of these scores.

Table 1. Attitudes towards hybrid English learning

No.	Item	All (n=109)	Male (n=35)	Female (n=74)
1.	The use of online English lectures is very beneficial	4.13	4.14	4.12
2.	A Learning Management System (LMS) is useful in facilitating English lectures	4.41	4.49	4.38
3.	Obstacles faced when learning English in a hybrid manner are relatively few	3.66	3.77	3.61
4.	Lecturers facilitate the collection of English lecture assignments online	4.35	4.51	4.27
5.	I can focus when studying English both online and offline	4.17	4.20	4.15
6.	Hybrid learning (online + offline) can increase student enthusiasm in English lectures	4.03	3.94	4.07
7.	English learning will be interesting if it is integrated with many natural science or social science topics	4.15	4.31	4.07
8.	English learning should be oriented toward improving higher order thinking Skills (HOTS) abilities	4.13	4.29	4.05
	Total Score (Scale 0-100)	**82.55**		
	Category	**Very High**		

As shown in Table 1, the highest mean score was recorded for item 2 regarding the utility of the LMS (M = 4.41), while the lowest mean score was recorded for item 3 regarding the presence of obstacles in the hybrid format (M = 3.66). Meanwhile, the scores for each indicator for English learning attitudes can be seen in Table 2 below.

Table 2. Attitudes towards hybrid English learning

No.	Indicators	All (n=109)	Male (n=35)	Female (n=74)
1.	The use of e-learning and LMS in English learning	4.27	4.31	4.25
2.	Obstacles in Hybrid Learning	4.00	4.14	3.94
3.	Students focus and activities in hybrid English learning	4.10	4.07	4.11
4.	Integration of English learning topics and HOTS skills	4.14	4.30	4.06

Indicator-level analysis in Table 2 shows that Indicator 1 (Use of e-learning and LMS) yielded the highest mean (M = 4.27), while Indicator 2 (Obstacles) yielded the lowest (M = 4.00).

b. Impact of behavior in hybrid English learning

Students' behavioral responses related to hybrid English learning are summarized in Table 3. The overall behavior score reached 79.78 on a 0–100 scale, categorized as *high*. Detailed item scores are presented in Table 3.

Table 3. Hybrid English learning behavior

No.	Item	All (n=109)	Male (n=35)	Female (n=74)
1.	Lecturers provide English-related questions via learning management system/ WhatsApp/ other similar social media	4.13	4.06	4.16
2.	I open English test questions and work on them online and in real-time	4.28	4.06	4.39
3.	I upload English assignments according to the assignment submission deadline	4.64	4.60	4.66
4.	I did not experience any obstacles during the English language test/ exam conducted in a hybrid manner (online/ offline)	3.90	3.60	4.04
5.	The evaluation conducted in a hybrid manner in English lectures is based on high-level thinking skills (HOTS)	3.94	3.80	4.00
6.	The English language test questions that I worked on in a hybrid manner were more related to questions that required critical analysis skills	3.83	3.86	3.82
7.	The ability to speak English is easy to train with hybrid learning	3.60	3.60	3.59
8.	The speaking practice test in English lectures is conducted in a hybrid manner	3.50	3.57	3.47
9.	The ability to read long English texts is presented in hybrid learning and the questions presented are based on analytical skills	3.77	3.74	3.78
10.	Lecturers provide English material in a hybrid manner proportionally according to the online and offline schedules that have been determined	4.29	4.26	4.31
	Total Score (Scale 0-100)	**79.78**		
	Category	**High**		

In Table 3, item 3 (uploading assignments on time) reached the highest mean (M = 4.64). Conversely, item 8 (speaking practice tests) received the lowest mean score (M = 3.50). In addition, the results of the hybrid English learning behavior scores can be seen in Table 4.

Table 4. Indicators of hybrid English learning behavior

No.	Indicators	All (n=109)	Male (n=35)	Female (n=74)
1.	Behavior of using LMS and social media in hybrid learning	4.21	4.06	4.28
2.	Hybrid exams	4.27	4.10	4.35
3.	Use of HOTS skills in doing hybrid exams	3.89	3.83	3.91
4.	Speaking skills trained in hybrid	3.55	3.59	3.53
5.	Reading skills trained in hybrid proportionally	4.03	4.00	4.05

The indicator analysis in Table 4 revealed that Indicator 2 (Hybrid exams) as the highest-scoring behavior (M = 4.27), while Indicator 4 (Speaking skills) scored the lowest (M = 3.55).

c. Integrated and innovation environmental issue in English learning

Data regarding the integration of environmental issues into English learning behavior resulted in a total score of 81.03, falling into the "High" category (Table 5).

Table 5. Integrated English learning behavior scores for environmental issues

No.	Item	All (n=109)	Male (n=35)	Female (n=74)
1.	English learning should be presented in the form of climate change and environmental damage themes	3.81	3.71	3.85
2.	The material presented in English lectures should follow the current news discussion topics such as sustainable environmental issues	4.06	4.06	4.07
3.	English learning carried out through hybrid should be integrated by examining solutions from environmental movements such as reduce, reuse, recycle, and replace (4R)	4.06	4.17	4.00
4.	English learning needs to be integrated with environmental topics because there are many environmental problems with international reference sources	4.12	4.23	4.07
5.	One form of the benefits of English learning is when students can campaign more widely about the environment on social media using English	4.21	4.17	4.23
	Total Score (Scale 0-100)	**81.03**		
	Category	**High**		

As shown in Table 5, the highest mean score was found in item 5 (environmental campaigning on social media) at M = 4.21. The lowest score was found in item 1 (thematic presentation of climate change) at M = 3.81. As for the score for each indicator of behavior in learning English integrated with environmental issues, it can be seen in full in Table 6.

Table 6. Scores for each indicator of integrated English learning behavior on environmental issues

No.	Indicators	All (n=109)	Male (n=35)	Female (n=74)
1.	Relevance of English learning with current environmental themes	3.94	3.89	3.96
2.	Integration of English learning with environmental topics	4.13	4.19	4.10

Table 6 shows that Indicator 2 (Integration) had a higher mean (M = 4.13) than Indicator 1 (Relevance) (M = 3.94). Female students recorded a higher mean in the relevance indicator (M = 3.96) compared to male students (M = 3.89).

2. Discussion

The findings of this study indicate that hybrid English learning integrated with environmental and sustainability issues has generated consistently high levels of student engagement across both attitudinal and behavioral dimensions. Students reported a very high attitude score toward hybrid English learning (M = 82.55), a high level of behavioral engagement in hybrid learning activities (M = 79.78), and a similarly high level of engagement in English learning that incorporated environmental issues (M = 81.03). These results suggest that students do not perceive hybrid learning merely as a temporary technological adaptation, but as an effective and meaningful instructional environment that supports both language development and interdisciplinary learning. The strong acceptance of Learning Management Systems (LMS), timely assignment submission, and positive responses toward environmental themes collectively indicate that students are able to connect technological participation with broader intellectual and social purposes.

A particularly important finding is that the highest attitudinal score was associated with the usefulness of LMS platforms in facilitating English instruction, while the strongest behavioral indicator concerned students' discipline in submitting assignments within established deadlines. At the same time, the integration of environmental themes was positively received, especially when students recognized that English proficiency enabled them to communicate environmental messages more widely through digital platforms and social media. These patterns demonstrate that hybrid learning is effective not only because it combines online and face-to-face modalities, but because it creates a structured learning ecosystem in which students perceive technology, language, and global issues as mutually reinforcing elements. The comparatively lower scores for speaking activities indicate that oral interaction remains more challenging in hybrid contexts, yet these scores remained within a positive range, suggesting that the limitation is pedagogical rather than structural.

The broader meaning of these findings is that hybrid English learning functions as a behavioral transformation rather than simply a delivery mechanism. The consistently high scores across all constructs reveal that students are developing dispositions associated with autonomous learning, self-regulation, and critical engagement. This

interpretation is consistent with research showing that hybrid learning can increase student participation and academic responsibility by combining flexibility with structured learning expectations (Salah & Parapatics, 2025; Grosch et al., 2014; Mellor et al., 2018; Wu et al., 2020; Yusuf & Widyaningsih, 2022). It also supports the argument that learner-centred digital environments foster qualities that are central to 21st-century education, including independent learning, reflective thinking, and responsible decision-making (Agnesa & Rahmadana, 2022; Budiarti et al., 2016). In this sense, the present findings suggest that students are not passive recipients of technological instruction; rather, they become active agents who organize their learning, manage digital resources, and engage with knowledge in more intentional ways.

Furthermore, this shift toward learner agency enables students to tailor their individual learning paths, effectively leveraging the LMS to bridge the gap between classroom instruction and personalized study needs (Tran, 2024). By optimizing this flexibility, learners cultivate the capacity to refine their linguistic strategies through iterative feedback loops, which ultimately enhances their overall proficiency and self-efficacy (Ayu et al., 2025; Kholis & Lisan, 2024; Wei, 2023). Consequently, this mastery of digital environments empowers students to navigate complex academic requirements with increased autonomy and perseverance (Al-khresheh & Alkursheh, 2024).

The integration of environmental and sustainability issues adds an important conceptual dimension to this transformation. When English learning is connected to themes such as climate change, recycling, and sustainable development, language acquisition is no longer confined to grammatical mastery or isolated communication practice. Instead, language becomes a medium through which students interpret, discuss, and respond to real-world challenges. This finding confirms earlier studies showing that meaningful and authentic themes increase motivation, critical thinking, and communicative engagement in English education (Namaziandost et al., 2019; Garside, 2024). It also aligns with research demonstrating that environmental education can strengthen pro-social and pro-environmental attitudes when integrated into academic instruction (Hazem et al., 2026; Nkaizirwa et al., 2021). The present study therefore indicates that environmental themes do not distract from language learning; rather, they enrich it by providing substantive contexts that stimulate intellectual curiosity and ethical reflection.

From a theoretical perspective, these findings can be interpreted through constructivist and technology-mediated learning frameworks. Constructivist theory assumes that learners

actively construct knowledge by connecting new information with meaningful experiences. In hybrid environments, this process is amplified because students interact with diverse digital resources, collaborate across multiple platforms, and engage with authentic content rather than relying exclusively on teacher-centred explanations (Alenezi, 2023; Okoye et al., 2023; Wang et al., 2024). The positive responses observed in this study suggest that hybrid English learning facilitates this knowledge construction process by enabling students to explore issues that are linguistically demanding and socially significant. This interpretation is further supported by recent studies showing that blended and hybrid English learning environments enhance self-regulated learning, learner motivation, and communicative engagement when technology is integrated purposefully into language instruction (Tran, 2024; Kholis & Lisan, 2024; Wei, 2023; Al-khresheh & Alkursheh, 2024).

Pedagogical approaches such as Project-Based Learning (PjBL), inquiry-based learning, and discovery-oriented instruction are particularly relevant because they encourage learners to investigate problems, synthesize information, and communicate evidence-based conclusions (Suherman et al., 2020; Siregar et al., 2021). The findings therefore reinforce the view that hybrid learning is most effective when technology is integrated with pedagogical strategies that promote higher-order thinking and interdisciplinary inquiry. This conclusion is consistent with broader analyses of digital transformation in higher education, which emphasize that educational technologies generate meaningful learning outcomes only when embedded within coherent pedagogical designs rather than treated merely as delivery tools (Bashir & Lapshun, 2025; Mbaidin, 2024; Tonukari & Anyigba, 2021).

At the same time, the findings extend existing hybrid learning theory by challenging the common tendency to treat technological delivery and thematic content as separate dimensions. Previous studies have primarily examined hybrid learning in terms of infrastructure, accessibility, instructional media, and academic performance (Durand et al., 2019; Lajis et al., 2019; Prahani et al., 2020; Buzov, 2014; Suryanda et al., 2016; Afifah & Retnawati, 2019; Best & MacGregor, 2017; Cybart-Persenaire & Literat, 2018), whereas studies in English language education and sustainability have highlighted the role of authentic themes and environmental issues in strengthening motivation, critical thinking, and communicative engagement (Olinto et al., 2018; Ross, 2017; Shinyaeva et al., 2019; Ibrahim & Harun, 2017; Khoiriyah & Husamah, 2018; Garside, 2024; Namaziandost et al., 2019; Nkaizirwa et al., 2021). The present study

demonstrates that these two domains become more powerful when deliberately integrated. Students' positive responses indicate that instructional effectiveness depends not only on technological readiness but also on the intellectual and social significance of the content, suggesting that technology is most effective when used to engage learners with meaningful global issues rather than functioning merely as a delivery tool.

The principal contribution of this study lies in the empirical validation of an integrated pedagogical model that combines hybrid learning, English language education, and ecological literacy. This finding moves beyond the conventional view of hybrid learning as a logistical response to educational disruption and repositions it as an interdisciplinary framework in which digital tools support language development while fostering environmental awareness and ethical responsibility. In this respect, the study extends prior research on technological readiness (Alcaide-Pulido et al., 2025) and learner autonomy (Pokharkar et al., 2024) by showing that sustainability-oriented content adds a deeper civic and moral dimension to student engagement. The novelty of this study therefore lies in the pedagogical integration of technological flexibility, linguistic development, and sustainability literacy within a single instructional design.

The findings carry important practical and theoretical implications. They suggest that effective hybrid English learning requires not only adequate digital infrastructure but also curricula that connect language practice with contemporary global issues. By incorporating environmental topics, sustainability case studies, and SDGs-related materials, lecturers can simultaneously strengthen students' reading, writing, speaking, and critical analysis skills. The relatively lower scores for speaking activities indicate the need for more interactive oral tasks, such as virtual presentations and debates, to enhance communicative competence (Shen et al., 2024; Tan et al., 2024; Thao et al., 2023; Wang & Kabilan, 2024). More broadly, these findings reinforce the view that English serves not only as a means of communication but also as a gateway to global knowledge and transnational discourse (Retnowaty, 2025; Altin & Saracaloğlu, 2018; Chang, 2023; Fan, 2023; Garside, 2024; Marlina, 2022). By embedding sustainability themes into English instruction, language learning becomes a form of global citizenship education that links linguistic competence with ethical awareness and intercultural responsibility. In this way, hybrid English learning evolves from a convenient delivery model into an interdisciplinary pedagogical strategy that promotes academic excellence, technological literacy, and social responsibility.

Although this study was conducted in a single university in Indonesia, its implications extend far beyond the local context. By integrating hybrid pedagogy,

English language learning, and sustainability-oriented content, the study offers an interdisciplinary model that is relevant to higher education systems worldwide. This model responds to shared global challenges, including digital transformation, environmental sustainability, and the need to prepare students as responsible global citizens. Supported by digital platforms and Open Educational Resources, the approach can be adapted across diverse institutional and national settings, particularly in universities seeking to modernize language education while aligning with SDGs, especially Goal 4 on quality education (Cole & Hamilton, 2020; Wang & Kabilan, 2024). In this sense, the study contributes not only to the Indonesian context but also to broader international efforts to develop English education that is technologically innovative, environmentally informed, and socially responsive.

Taken together, these findings establish a clear academic position: hybrid English learning becomes most educationally meaningful when technological innovation is combined with substantive global content. Technology may expand access and flexibility, but it is the integration of intellectually and ethically significant themes that transforms student engagement into deeper forms of learning. By demonstrating that environmental issues strengthen rather than compete with language instruction, this study advances an interdisciplinary understanding of hybrid pedagogy and provides empirical evidence that English education can simultaneously foster communicative competence, ecological awareness, and sustainability consciousness.

Although the findings highlight the educational potential of integrating sustainability issues into hybrid English learning, several limitations should be acknowledged. The study was conducted with a single cohort of students from one university, which may limit the extent to which the results can be generalized to other institutional, geographical, and socio-cultural contexts. In addition, the use of self-reported survey data captures students' perceptions and behaviors at a single point in time and does not directly measure long-term changes in language proficiency or sustainability literacy. Furthermore, although the descriptive survey design provides robust evidence regarding patterns and relationships among variables, it does not establish causal effects between hybrid pedagogy and learning outcomes. These limitations should be taken into account when considering the broader applicability of the instructional model proposed in this study.

D. Conclusion

This study demonstrates that hybrid English learning integrated with environmental and sustainability issues generates consistently high levels of student engagement, as reflected in very high attitudes toward hybrid learning and high behavioral participation in both hybrid and environmentally integrated English instruction. The findings confirm that hybrid English learning has evolved beyond a temporary technological adaptation into a meaningful instructional ecosystem that supports language development, digital literacy, and interdisciplinary learning. Students' positive responses to Learning Management Systems, timely assignment completion, and environmental themes indicate that technology becomes more educationally effective when combined with content that is intellectually relevant and socially significant. These results are consistent with the article's empirical findings presented throughout the Results and Discussion sections.

The principal contribution of this study lies in its empirical validation of an integrated pedagogical model that combines hybrid learning, English language education, and ecological literacy. By demonstrating that environmental and sustainability issues enhance rather than distract from language learning, the study extends the understanding of hybrid pedagogy as an interdisciplinary framework that simultaneously develops communicative competence, critical thinking, and sustainability consciousness. This contribution enriches both hybrid learning scholarship and English language education by positioning language instruction as a strategic medium for fostering global citizenship and ethical responsibility in higher education.

In light of the limitations identified in this study, particularly the use of a single institutional context, self-reported cross-sectional data, and a descriptive survey design, future research should involve multiple universities and more diverse socio-cultural settings to test the broader applicability of this instructional model. Longitudinal and experimental studies are also recommended to examine causal effects and to measure long-term changes in language proficiency and sustainability literacy. Further investigations may explore the integration of specific instructional approaches, such as Project-Based Learning and Inquiry-Based Learning, as well as technology-enhanced speaking applications to strengthen communicative performance in hybrid environments.

Ultimately, hybrid English learning is most impactful when it is conceived not merely as a delivery method, but as a pedagogical strategy for connecting language education with pressing global challenges. The integration of sustainability themes into

English instruction demonstrates that higher education can cultivate graduates who are not only linguistically competent, but also environmentally aware and socially responsible. This study underscores that the deliberate fusion of technological innovation, language learning, and sustainability offers a promising direction for developing globally relevant and academically meaningful English education in the twenty-first century.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Generative AI

The authors admit using generative artificial intelligence (AI) techniques to prepare this publication. AI aid was only used for language improvement, structural organization, and the synthesis of previously developed concepts by the writers. The authors are solely responsible for all intellectual content, interpretations, and conclusions. The AI did not generate new data, perform analysis, or replace the authors' scholarly judgment.

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