Digital Project-Based Learning in English Language Education: Instrument for Achieving Sustainable Development Goals

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ABSTRACT

Digital Project-Based Learning (DPBL) represents an innovative pedagogical approach that integrates digital technologies within project-based learning to enhance English language education in alignment with the Sustainable Development Goals (SDGs), particularly Goal 4: inclusive and equitable quality education. This study employs a Systematic Literature Review (SLR) to investigate the implementation of DPBL in English language teaching and its effectiveness in fostering essential 21st-century competencies such as communication, digital literacy, critical thinking, and global citizenship. Data were collected from peer-reviewed publications between 2019 and 2024 using the Publish or Perish software and databases including Scopus and Google Scholar. The review highlights that DPBL not only improves English language proficiency but also enhances student motivation, engagement, and awareness of real-world challenges aligned with sustainability values. The findings suggest that DPBL is a promising instructional strategy that bridges language acquisition with global education goals, making it a valuable contribution to both academic and sustainable development agendas.

Keywords: Digital Project-Based Learning, Project-Based Learning, Sustainable Development Goals
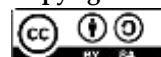
INTRODUCTION

The Sustainable Development Goals (SDGs) are a set of 17 global objectives established by the United Nations (UN) in 2015 to address the world's significant challenges, such as poverty, inequality, climate change, and environmental sustainability. The SDGs are designed to be achieved by 2030 and encompass integrated social, economic, and ecological aspects. English education can play a strategic role in supporting several vital SDGs, particularly in the area of quality education (van Tulder & van Mil, 2015). English language education plays a strategic role in shaping a generation capable of addressing global challenges, particularly through the development of cross-cultural communication skills, critical thinking, and awareness of global issues (Madkur, 2024; Rokhmawan et al., 2024; Madkur & As'ad). These studies emphasize the importance of digital technology in transforming modern education, especially in the post-pandemic context. Although digital technology offers numerous benefits, its implementation faces significant challenges that require strategic attention and solutions (Haleem et al., 2022). Another study by Almayez et al. (2025) examined the relationship between motivation, self-regulated learning strategies (SRLS), and English self-efficacy (ESE) among EFL university students in Saudi Arabia who used online learning applications. Beckett and Slater (2018) demonstrated that project-based learning effectively enhances speaking and collaboration skills among EFL/ESL students. However, their study did not address the use of digital media or the

integration of sustainability values aligned with the SDGs. Key research gaps include (a) A lack of exploration into integrating digital tools or platforms into PBL; (b) No linkage of project topics to sustainability values such as environmental issues, equity, or global responsibility; and (c) The absence of follow-up studies to assess the impact of PBL after project completion or in subsequent learning stages (Umar et al., 2025). Some researchers found that Project-Based Learning effectively improves students' speaking skills and self-confidence (Purnami & Widiadnya, 2024; Siregar, 2024; Maryani et al., 2023). Through active participation in projects, students develop better communication abilities and become more confident in public speaking. However, several areas require further attention, such as fostering student collaboration, incorporating sustainability values, evaluating long-term impacts, and providing practical implementation guidelines. Research gaps identified in this study are (a) Limited exploration of how digital projects facilitate peer collaboration; (b) No connection between project topics and global sustainability values; (c) A lack of follow-up studies on the long-term effects of mobile app usage in learning; (d) The absence of comprehensive guidelines for educators seeking to implement similar approaches. Lang's (2024) research outlines several innovative approaches from the book Digital Language Learning: New Approaches and Methods, edited by Jose Belda-Medina, Christina Holgado-Sáez, and Juncal Gutiérrez-Artacho (Peter Lang, 2024). The study discusses Augmented Reality (AR): Chapters 1 and 2 highlight AR's potential to enhance grammar comprehension and learners' self-perception in English learning.

This study explores how English is taught through digital project models while also examining how sustainability values can be conveyed through such projects; (b) The objects and subjects of prior research are broader and more multidimensional, encompassing educational technology, SDG integration in curricula, online learning motivation, mobile applications, Augmented Reality (AR), and virtual exchange. Meanwhile, this study specifically targets English language instruction through digital project-based models and investigates how sustainability values can be embedded within these projects; (c) Several research gaps are identified, including the predominance of descriptive studies or literature reviews lacking empirical data (a) Limited investigation into the long-term impact of digital technologies on learning; (b) Inadequate integration of sustainability themes into project-based learning; (c)A lack of attention to local contexts (e.g., developing countries) and cultural adaptation. This study addresses these gaps by designing and testing a contextually relevant, technology-based DPBL model that explicitly incorporates SDG values such as equity, sustainability, and global responsibility into project content; (d) In terms of research aims, prior studies generally highlight (1) The importance of digitalization in post-pandemic education; (2) The effectiveness of various digital technologies (e.g., mobile apps, AR, gamification) in language learning; (3) Barriers to integrating technology into the curriculum.

In contrast, this research analyzes the effectiveness of DPBL not only for English language instruction but also as a vehicle for fostering global awareness and sustainability through SDG-themed projects; (e) Regarding contributions, prior studies tend to offer comparative and critical reviews of different educational technology models and recommend the need for practical guidelines and longitudinal studies. In contrast, the present study proposes an innovative and integrative learning model (language–technology–SDG values) that can be practically implemented in classroom-based project learning. In other words, while previous studies tend to provide broad examinations of educational technology, including DPBL, they have yet to specifically investigate how digital projects in English language learning can be explicitly designed to deliver sustainability values as outlined in the SDGs. The present study, by contrast, is guided by the assertion that "DPBL offers a promising approach..." and reflects a more focused and practical research direction that integrates (a) A specific learning model (DPBL); (b) The Sustainable Development Goal of quality education (SDG 4); (c) 21st-century skills; and; (d) A contextual contribution to reinforcing global values through language education.

This topic is of particular importance for investigation due to several compelling reasons are (1) There remains a limited body of research that concretely and applicably links English language learning strategies with the attainment of Sustainable Development Goals (SDGs); (2) There is a pressing need for a pedagogical model that effectively integrates language skills, digital

literacy, and global awareness within a cohesive instructional framework; (3) The context of 21st-century education demands learning approaches that are technologically adaptive, collaborative, and relevant to global challenges; and (4) Digital Project-Based Learning (DPBL) holds significant potential to enhance student motivation, engagement, and the development of interdisciplinary competencies that support sustainable development. Therefore, research on the implementation of DPBL in English language learning not only contributes to the advancement of innovative instructional strategies but also reinforces the critical role of education in shaping globally minded citizens — those who are critical, reflective, and concerned with sustainability issues.

Despite the increasing scholarly attention to the integration of digital technology and sustainability into English language education, the current body of literature still reveals several key gaps in terms of theoretical depth, empirical evidence, and contextual relevance. Many studies (e.g., Haleem et al., 2022; Ortín, 2021) rely heavily on descriptive or theoretical approaches, with limited empirical data or experimental studies. This limits the generalizability and robustness of conclusions, particularly in underrepresented settings such as developing countries. Most research lacks longitudinal evaluations, thereby failing to examine the long-term effects of digital tools or SDG-integrated strategies on student outcomes. Several works (Lang, 2024; Almayez et al., 2025) predominantly focus on developed educational ecosystems with robust digital infrastructure, overlooking the constraints and opportunities in low-resource environments. There is a research void regarding cultural adaptation, institutional dynamics, and resource allocation in settings like Southeast Asia, Africa, or Latin America. While DPBL and digital tools are praised for enhancing English proficiency (Beckett & Slater, 2018; Yamin et al., 2020), few studies explicitly connect these tools with the delivery of sustainability values (SDGs), particularly SDG 4 (Quality Education). Projects are often language-centered but lack intentional sustainability themes such as environmental responsibility, equity, or global citizenship (Woro Kusmaryani & Tanjung, 2023). Studies such as by Woro Kusmaryani & Tanjung (2023) do not deeply explore how digital tools promote peer collaboration, a central tenet of both PBL and the SDG framework. Gender, equity, and inclusion aspects are largely underexamined, despite their critical importance in achieving equitable education (van Tulder & van Mil, 2015).

Although several authors (e.g., Ortín, 2021; Purnami & Widiadnya, 2024) suggest the need for practical guidelines, structured, replicable pedagogical frameworks that integrate language learning, sustainability, and digital literacy remain rare. There is a lack of integrative research that positions these elements within a unified instructional model (e.g., language–technology–SDG framework). This study addresses the aforementioned gaps by (a) Developing and empirically testing a contextualized DPBL model tailored to the needs of students in developing regions; (b) Embedding sustainability themes into digital project tasks to enhance both language acquisition and global awareness.

The present study directly addresses the gaps identified in previous research on the integration of digital project-based learning (DPBL) in English Language Teaching (ELT), particularly in relation to the Sustainable Development Goals (SDGs). While prior studies often focus narrowly on either digital tools or project-based learning in ELT, this study utilizes a Systematic Literature Review (SLR) methodology to synthesize findings from Scopus and Google Scholar databases (2019–2024). By doing so, it provides a comprehensive empirical mapping of how DPBL has been applied in English language instruction, thus filling the void of cumulative, evidence-based knowledge in this domain. A critical shortfall in existing literature is the limited exploration of how sustainability values are embedded in language instruction. This study specifically examines how DPBL fosters not only English proficiency but also global awareness, collaboration, and critical thinking aligned with SDG 4 (Quality Education) — thereby expanding the scope of ELT beyond linguistic outcomes. Unlike previous works that often overlook underrepresented educational settings, this research provides a conceptual model that is adaptable to diverse learning contexts, including those in developing countries. It contributes to a more inclusive academic conversation by identifying practices applicable across varied socio-economic and cultural landscapes. Rather than treating ELT, sustainability education, and digital pedagogy as separate silos, this study proposes an interdisciplinary perspective that unites them within a DPBL framework. This theoretical convergence offers a holistic instructional model that

addresses 21st-century educational demands. By analyzing how DPBL enhances both language learning and sustainability-oriented competencies, the study yields actionable insights for curriculum development, teacher training, and educational policy. This supports the call in the literature for more structured, replicable models that can guide practitioners in implementing meaningful, future-ready ELT practices. Overall, digital project-based learning not only teaches English more effectively but also develops valuable technical and communication skills that are crucial in today's digital era (Yamin et al., 2020; Roisatin et al., 2022; Wijaya et al., 2025)

METHOD

This research is descriptive qualitative research using a literature review or Systematic Literature Review (SLR). The literature used is journals/articles that are relevant to the problem or research objectives (Yohanis N dapa Deda et al., 2023). A systematic literature review selects, identifies, and evaluates research to answer formulated research questions. This research aims to explore the application of digital project-based learning. In this systematic literature review, the study begins by identifying articles on the implementation of digital project-based learning from the Scopus and Google Scholar databases using the Publish and Perish tools. There are four phases involved in the literature mapping process: the identification phase, the screening phase, the feasibility phase, and the inclusion phase (Dahlan & Selatan, 2022).

Figure 1. Flow Chart SLR Using Prisma Model
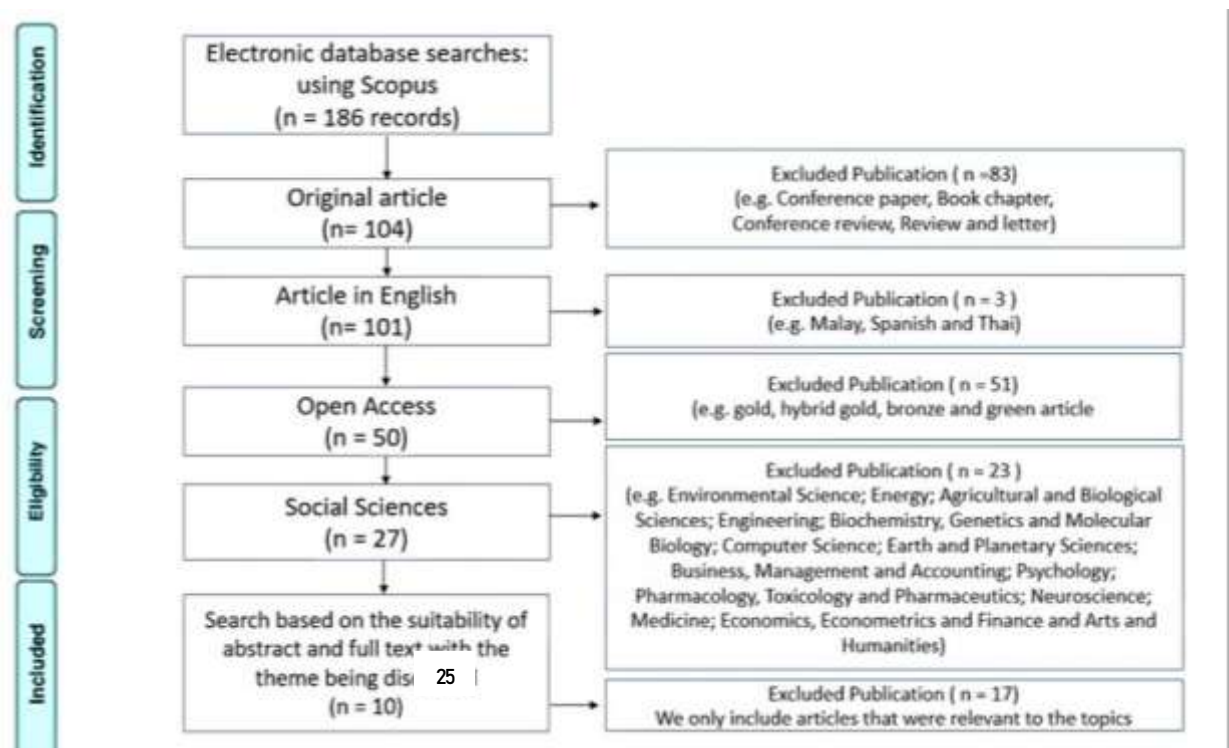
Research Questions on Systematic Literature Review

Research Question	Motivation
What is Digital project-based learning in English Language Education: Instrument for Achieving SDGs Goals?	To identify Digital project-based learning in English Language Education: Instrument for Achieving SDGs Goals

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First Phase (Identification)

Determination of articles that fulfill the set criteria. First, the database sources used for this systematic literature review are Scopus and Google Scholar, and the requirements for articles published between 2019 and 2024 are as follows. The Scopus database uniquely combines various scientific literature in education. The Google Scholar database is a free and accessible search engine that covers most peer-reviewed literature across multiple disciplines. (Yohanis Ndapa Deda et al., 2023)Articles were identified through related keywords based on the two search engines required for the review, as shown in Table 1.

Table 1 Keywords used to search for relevant articles

Database	Keywords
Scopus	Digital project-based learning in English Language Education: Instrument for Achieving SDGs Goals
Google Scholar	Digital project-based learning in English Language Education: Instrument for Achieving SDGs Goals

Table 1 shows that the keyword used in searching for relevant articles is Digital project-based learning in English Language Education: Instrument for Achieving SDGs Goals. The focus determined in this literature leads to research related to Digital project-based learning in English Language Education: Instrument for Achieving SDGs Goals. The next step is determining the criteria for articles that include and exclude from the focused theme according to the framework required for the review, as shown in Table 2.

Table 2. Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Journal Article	Book chapters, book, proceedings, review
Articles published 2019-2024	Articles unpublished 2019-2024
Articles on Digital project-based learning in English Language Education: Instrument for Achieving SDGs Goals	Articles out on Digital project-based learning in English Language Education: Instrument for Achieving SDGs Goals
Articles related to Digital project-based learning in English Language Education: Instrument for Achieving SDGs Goals	Articles unrelated to Digital project-based learning in English Language Education: Instrument for Achieving SDGs Goals
English Articles	Non-English Articles

Table 2 illustrates the articles selected for follow-up based on the inclusion and exclusion criteria. The full text of each article was downloaded, and articles that met the exclusion criteria were excluded. In other words, the included articles were reviewed and analyzed in depth to answer the research questions. Thus, determining inclusion and exclusion criteria is crucial for creating high-quality research studies.(Lavado-Anguera et al., 2024)

Second Phase (Screening)

Literature results from Scopus and Google Scholar databases were filtered through Mendeley software to separate articles identified as duplicates. Next was the title and abstract screening process, which mapped articles based on their titles and abstracts. Titles were screened for relevance and matched with the keywords used. Then, the abstracts of each article were screened and scanned according to the predetermined inclusion and exclusion criteria.(Lavado-Anguera et al., 2024)

Third Phase (Eligibility)

At this stage, articles were analyzed and checked for eligibility through Mendeley software. The articles were selected by adjusting the inclusion and exclusion criteria in Table 2. After the articles were identified as eligible, the next step was to download the full text and separate the articles included in the exclude criteria. In this phase, articles determined to be eligible must be able to map the answers to the study's questions.

Fourth Phase (Extraction)

After checking the eligibility of articles based on the include and exclude criteria. Eligible articles in the included criteria will be extracted and analyzed according to the statements used as guidelines: Participant, Intervention, Comparator conditions, Outcomes, and Studies (PICOS). (Lavado-Anguera et al., 2024)

RESULT AND DISCUSSION
Digital project-based learning in English Language Education: Instrument for Achieving SDGs Goals

According to the findings of the Scopus and Google Scholar databases, 248 databases use the keyword "Digital project-based learning in English Language Education: Instrument for Achieving SDGs Goals." After the identification process through Mendeley software, ten articles were found to be included in the criteria with predetermined conditions. The mapping of 25 articles will be explained based on author, year of publication, journal (journal name, volume, edition, year), publication, Scopus accredited, and relevance to the research question (RQ), namely (RQ1). The following is a table of mapping articles included in the criteria.

No	Author & Date	Title	Publication	Scope Accredited
1	Beibei Yu, Wu Yuan Guo and Hongpeng Fu, 16 April 2024	Sustainability in English Language Teaching: Strategies for Empowering Students to Achieve the Sustainable Development Goals	MDPI	Q1
2	Angela Imbaquingo, Jorge Cárdenas, 9 June 2023	Project-Based Learning as a Methodology to Improve Reading and Comprehension Skills in the English Language	MDPI	Q1
3	Elena Vercher Ribis, 28 August 2024	Fostering Sustainability Through Project-Based Learning: The Sustainable City Project, A Case Study in Primary Education	UBIQUITY PRESS	QI
4	Ming-Fang Lin, Yuan-shan Che, Yu-Ting La, 19 May 2022	Promoting the Sustainable Development of Rural EFL Learners' Email Literacy through a Facebook Project	MDPI	Q1
5	Namita Maharjan, Kyohei Kurod	Implementation Of design Based Learning For The Development Of SDGS Educational Games	Omnia Science	Q2
6	Alexander Nanni, Laird Allan, 2024	PBL and the New Ecological Paradigm: Fostering Environmental Awareness Through Project-Based Learning	Asia TEFL	Q2
7	Asrizal, Hermalina Daulay, 09/13/2024	Digital teaching material of sustainable lifestyle theme	Journal of LAW and	Q2

		With ethno-pjbl to promote students' knowledge and Creative thinking abilities	Sustainable Development	
8	Eneng Rahmayanti, Sumar Hendayana, 2021-11-04	Project Eneng Rahmayanti Based Learning in Pandemic Covid-19: The Implementation of ESD to Develop Students' Critical Thinking Skills	Unnes Science Education Journal	Sinta 3
9	Silvia Lavado-Anguera, Paloma-Julia Velasco-Quintana, June 2024	Project-Based Learning (PBL) as an Experiential Pedagogical Methodology in Engineering Education: A Review of	MDPI	Q1
10	Y. Yamin, Anna Permanasari, 2 July 2020	Implementing project-based learning to enhance creative thinking skills on water pollution topic	JPBI	
11	Chen, Pai-Hsun, 2024	Integrating Sustainable Development Goals into Project-Based Learning and Design Thinking for the Instructional Design of a Virtual Reality Course	MDPI	Q1
12	Rosmiatia,Muhammad Satriawan, Arif Fannya, Rarasaning Satianingsiha, Sri Utaric, Elok Ningsiha, Gadis Rasyiidaa, Andhini Anandhaa, Putri Anama, 2025	Design of Reflective - Sustainable Development Education Oriented Project-based Learning Platform for Elementary School Students in Indonesia	Malque Publishing	Q4
13	Long Thang Van Nguyen, Donna Cleveland, Chi Tran Mai Nguyen, Corinna Joyce, 2024	Problem-based Learning and The Integration of Sustainable Development Goals,	Emerald	Q1
14	Joseph Ernest Mambu, 2023	Embedding Sustainable Development Goals into critical English Language Teaching and Learning	Taylor and Francis	Q1
15	Sri Adelila Sari Ratna Sari Dewi Kana Saputra Agus Kembaren Hanisah Hasibuan Corrienna Abdul Talib, 2025	Integration of Analytical Chemistry Flipbooks Based on Project-based Learning in Improving Critical Thinking Skills and Scientific Literacy to Support SDG-4	Universitas Negeri Semarang	Q3

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16	Zongguo Wang, Zaleha Abdullah, and Wenhai Hu, 2025	A Systematic Review of the Impact of Social Media on Project-Based Learning	MDPI	Q1
17	Mahima Kalla, Micheal Jerowsky, Benjamin Howes and Ann Borda, 2022	Expanding Formal School Curricula to Foster Action Competence in Sustainable Development: A Proposed Free-Choice Project-Based Learning Curriculum	MDPI	Q1
18	Rommel AlAli, Khalid Alsoud, and Fayez Athamneh, 2023	Towards a Sustainable Future: Evaluating the Ability of STEM-Based Teaching in Achieving Sustainable Development Goals in Learning	MDPI	Q1
19	Jaime González-Domínguez, Gonzalo Sánchez-Barroso, Francisco Zamora-Polo, and Justo García-Sanz-Calcedo,	Application of Circular Economy Techniques for Design and Development of Products through Collaborative Project-Based Learning for Industrial Engineer Teaching	MDPI	Q1
20	Aris Rudi Purnomo, Bambang Yulianto, Muhamad Arif Mahdiannur, Hasan Subekti, 2023	Embedding Sustainable Development Goals to Support Curriculum Merdeka Using Projects in Biotechnology	Society for Research and Knowledge Management	Q3
21	Mohammed Abdullatif Almulla, 2020	The Effectiveness of the Project-based Learning (PBL) Approach as a Way to Engage Students in Learning	Sage Publication, Inc	Q1
22	Ching-Yun Hsu and Ting-Ting Wu, 2023	Application of Business Simulation Games in Flipped Classrooms to Facilitate Student Engagement and Higher-Order Thinking Skills for Sustainable Learning Practices	MDPI	Q1
23	María-José Terrón-López, Paloma J. Velasco-Quintana, María del Carmen Espinosa-Elvira, 2020	Preparing Sustainable Engineers: A Project-Based Learning Experience in Logistics with Refugee Camps	MDPI	Q1
24	Daisy Rani Doley, 2024	Role of Web-Based Learning in Teaching English: Pathway to	Editora Alumni In	Q4

25	Namita Maharjan, Kyohei Kuroda Gunjan Silwal Shigehiro Toyama , Yoshihiro Ominato, Yasuko Tsuchida, Nobuo Araki, Takashi Yamaguchi, Makoto Ichitsubo, 2022	Implementation of Design Based Learning For The Development of Sdgs Educational Games	OmniaScience	Q2
		Sustainable Development Goals (SDG)		

Several studies relevant to this research have been published in the past four years; detailed explanations are provided in the table above. The first article explores the integration of sustainability in English Language Teaching (ELT) to support the Sustainable Development Goals (SDGs). It reviews studies from 2019 to 2024, evaluating methods for incorporating sustainability in ELT, challenges encountered, and practical solutions. The authors find that several effective approaches include interdisciplinary curriculum design, innovative classroom activities, specialized teacher training, and new assessment methods that enhance students' sustainability awareness while strengthening language skills. The difference in research findings between the first article and this study lies in using the digital project-based learning strategy. This is because the first article presents influential theories related to the curriculum without specifically describing digital project-based learning. However, the similarity between the first article and this study is in their shared perspective on the Sustainable Development Goals (SDGs), particularly in enhancing the quality of education through learning strategies and technology integration (Yu et al., 2024a)

The second article indicates that PBL effectively increases students' interest and competence in reading English. By engaging students in meaningful projects relevant to their social and educational context, PBL fosters collaborative learning, critical thinking, and motivation, significantly improving reading skills. The study recommends that PBL be more widely adopted as a strategy for teaching English reading, as it allows for a practical, student-centered approach to engagingly developing language skills. The difference between the second article and this study lies in the focus on improving the quality of education in line with the SDGs. The second article does not discuss the SDGs, whereas this study explicitly addresses improving quality education. The similarity between the second article and this study is in the teaching strategy used, which is the application of digital project-based learning in English language instruction (Lavado-Anguera et al., 2024)

The third article is structured to enhance multiple skills, such as digital literacy, critical thinking, and language (English as a Foreign Language). Through various sessions, students learn about sustainable development goals (SDGs), design sustainable homes using Tinkercad, build prototypes with recycled materials, and code interactive features. The article highlights the project's educational significance, noting its potential to develop future-ready skills and foster environmental awareness. The Sustainable City Project ultimately aims to prepare students to be responsible, eco-conscious citizens capable of contributing to sustainable urban development (Ribis, 2024a)

The fourth article, titled "Promoting the Sustainable Development of Rural EFL Learners' Email Literacy through a Facebook Project," explores a project aimed at improving email literacy among rural English as a Foreign Language (EFL) learners in Taiwan. The study involved two groups: university English majors and rural ninth-grade students. The project employed Facebook as a learning platform, where university students mentored ninth-graders in writing formal English emails over eight weeks. The study used various evaluation tools, including

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multiple-choice tests, written tasks, questionnaires, and interviews to measure the participants' progress and perceptions (Lin et al., 2022a)

The fifth article, "Implementation of Design-Based Learning for the Development of SDGs Educational Games," focuses on using Design-Based Learning (DBL) to create educational resources that promote Sustainable Development Goals (SDGs). The study was conducted in Japan and aimed to develop interactive SDG games that engage students and enhance their understanding of sustainability concepts. The researchers created three games (Bingo Mat, Carrom board, and Sugoroku) and evaluated their effectiveness in teaching SDGs and fostering essential skills, such as teamwork, creativity, and communication. The findings indicated that the DBL approach improved students' generic skills and helped them engage deeply with SDGs. The games also demonstrated different strengths: the Carrom board game provided an intense gaming experience, while Bingo and Sugoroku focused on learning outcomes. Overall, the study supports DBL as a promising method for embedding sustainability education in school curricula and highlights the importance of introducing SDG education at an early age. (Maharjan et al., 2022a)

The sixth article, "PBL and the New Ecological Paradigm: Fostering Environmental Awareness Through Project-Based Learning," by Alexander Nanni and Laird Allan, discusses a Project-Based Learning (PBL) approach used in a Thai university to promote sustainability education. Implemented within an intensive English for Academic Purposes (EAP) course, the project introduced students to sustainability concepts and evaluated changes in their environmental attitudes. The framework was based on Elkington's Triple Bottom Line (TBL), which covered sustainability's social, ecological, and economic aspects and guided students as they analyzed multinational companies (Nanni & Allan, 2020a)

The following article examines the impact of digital teaching materials with a sustainable lifestyle theme, integrated with an Ethno-Project-Based Learning (Ethno-PjBL) approach, on students' knowledge and creative thinking skills in the Indonesian "Merdeka Curriculum." The study used a quasi-experimental method involving 10th-grade students from a high school in Jambi, Indonesia, where the experimental group received digital Ethno-PjBL teaching materials. In contrast, the control group experienced conventional teaching. Key findings indicate that the Ethno-PjBL approach significantly improved both knowledge and creative thinking skills in the experimental group compared to the control group. Integrating technology with project-based learning, enriched by local cultural values, enhanced students' understanding of sustainable lifestyles and encouraged critical and creative thinking. (Asrizal et al., 2024)

The eighth article examines the use of Project-Based Learning (PjBL) integrated with Education for Sustainable Development (ESD) during the COVID-19 pandemic to enhance critical thinking among students. Conducted at SMPN 1 Jatinangor in Indonesia, the study utilized an integrated project-based approach across subjects to alleviate the burden of individual assignments in remote learning. The ESD project focused on sustainable agriculture, encouraging students to grow vegetables and raise fish at home, thus addressing Sustainable Development Goal (SDG) 2 related to hunger and food security. Through Transcript Based Lesson Analysis (TBLA), the analysis demonstrated that the PjBL method promoted students' critical thinking skills, notably in observation, hypothesis formation, and decision-making. Students also developed valuable life skills, creativity, and responsibility while fostering family involvement. The study concludes that PjBL and ESD can effectively build critical thinking, social responsibility, and cognitive skills, offering a meaningful, sustainable approach to learning in a remote environment (Rahmayanti et al., 2021)

The ninth article is a systematic literature review on applying Project-Based Learning (PBL) as an experiential pedagogical method in engineering education. It examines how PBL fosters real-world skills development, integrating theoretical knowledge with practical applications. Using the PRISMA protocol, the review analyzes 54 studies over 24 years to categorize PBL experiences according to a seven-pillar holistic model: technology, integrated curriculum, international focus, sustainability, multidisciplinary approaches, simulation, and professional environments. Key findings show that PBL effectively develops technical and non-technical skills essential for engineers. Each category highlights unique benefits and challenges.

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For example, technology-focused PBL promotes digital skills, while sustainability-focused projects raise environmental awareness. Despite challenges like resource allocation and faculty coordination, PBL enhances student engagement and skill acquisition. The review concludes with recommendations for further exploration of multidisciplinary and technological PBL applications, supporting a holistic model in engineering education. (Lavado-Anguera et al., 2024)

The tenth discusses the implementation of project-based learning (PjBL) to improve junior high school students' creative thinking skills regarding water pollution. Y. Yamin and colleagues conducted the study in Bandung, Indonesia. It aimed to examine how PjBL could foster critical competencies to tackle real-world environmental issues, aligning with 21st-century education goals. The study concluded that PjBL is a valuable educational strategy to nurture creative thinking skills, suggesting that further implementation of such methods in Indonesian schools could benefit students' development of essential 21st-century competencies. (Yamin et al., 2020)

The eleventh describes the integration of SDG topics into Project-Based Learning (PBL) and Design Thinking (DT) provides students with meaningful and engaging learning experiences, while also enhancing their understanding of the interconnections among the Sustainable Development Goals (SDGs). This study emphasizes the importance of incorporating real-world challenges into the instructional design of Virtual Reality (VR) courses and highlights the potential of VR technology in supporting SDG-related learning outcomes. Integrating SDGs into PBL and DT has proven effective for instructional design in VR-based courses, as it equips students to become responsible global citizens who actively contribute to the achievement of the SDGs (K.-S. Hsu et al., 2023).

The twelfth explains A project-based learning platform oriented towards Education for Sustainable Development (ESD) and reflective thinking for elementary school students in Indonesia. The result of this study are The integration of Education for Sustainable Development (ESD) within Project-Based Learning (PjBL) is effective in enhancing students' reflective thinking skills, awareness of sustainability issues, and their ability to solve problems creatively. Students demonstrated improvements in understanding sustainability concepts and were able to apply them in real-world projects relevant to their daily lives. The developed platform also facilitates teachers in designing and implementing learning activities that support sustainable development goals. Teachers reported that the platform aided them in creating more structured lesson plans focused on developing students' 21st-century skills. Overall, this study concludes that the development of a project-based learning platform oriented towards ESD and reflective thinking can serve as an effective tool to improve the quality of elementary education in Indonesia, while supporting the achievement of the Sustainable Development Goals (SDGs) through education (Rosmiati et al., 2025).

The thirteenth explores Problem-Based Learning (PBL) programs can effectively integrate the Sustainable Development Goals (SDGs) into higher education curricula, instructional materials, and relevant assessments to support large-scale learning initiatives within higher education institutions. The result is the PBL program at the institution has incorporated all 17 Sustainable Development Goals (SDGs), covering 100% of the goals and 94 indicators (55.62%). On average, each program addresses more than ten goals and over 24 related indicators. However, there is an imbalance in the integration of the SDGs, with several goals not yet deeply embedded in the curriculum. The main emphasis remains on sustainability theory, whereas the practical application of the SDGs in developing countries—particularly through case studies and assessment—requires significant enhancement (Nguyen et al., 2024).

The fourteenth explains about eight things about the integration Integration of SDGs in English Language Teaching (ELT) are (1) the integration of the Sustainable Development Goals (SDGs) in English Language Teaching (ELT) remains sporadic and implicit; (2) Most teachers address issues such as poverty, gender equality, and climate change thematically, yet without explicitly linking them to the SDGs; (3) There exists a tension between the national curriculum and critical pedagogy; (4) Teachers face significant challenges in aligning SDG-based critical approaches with the normative, linguistically oriented demands of the national curriculum; (5) There is a pressing need for critical literacy and reflective pedagogy; (6) Research highlights the

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need to enhance teachers' capacity to implement critical pedagogy that empowers students to deeply understand global issues and to position themselves as agents of change; (7) The SDGs serve as a tool for developing transformative competencies; (8) Integrating the SDGs into ELT promotes the development of global competence, social awareness, and critical thinking skills within English language learning. Meanwhile, practical implication of this research are (1) The development of contextual and reflective SDG-based ELT syllabi is urgently needed; (2) Teacher education programs should adopt transformational approaches that not only emphasize language skills, but also incorporate values of sustainability, justice, and global empathy; (3) ELT curricula must strike a balance between linguistic proficiency and critical engagement with social and ecological realities (Mambu, 2023).

The fifteenth explains Enhancing Critical Thinking and Scientific Literacy through a PjBL-Based Interactive Flipbook are (1) Improvement in Critical Thinking Skills was evidenced by a significant enhancement in students' critical thinking abilities compared to the control group through the use of a Project-Based Learning (PjBL)-based digital flipbook. This improvement was particularly notable in aspects such as clarification, inference, and argument evaluation; (2) Enhancement of Scientific Literacy was facilitated by the use of the interactive flipbook, which supported students' contextual and applicable understanding of analytical chemistry concepts. Scientific literacy showed marked progress, especially in the comprehension of scientific phenomena and the interpretation of scientific data; (3) Active Engagement and Student Reflection were fostered during the learning process, as project-based tasks required independent exploration and collaboration. The flipbook medium facilitated critical reflection, problem-solving, and the establishment of meaningful connections between chemistry concepts and sustainability issues; (4) Support for SDG 4 (Quality Education) was demonstrated by the learning media developed in this study, which contributed to the improvement of instructional quality and access to technology-integrated learning materials. The digital flipbook also reinforced the integration of sustainability values and the real-life relevance of science (Sari et al., 2025).

The sixteenth explains The Role of Social Media in Enhancing Collaboration and Communication in Project-Based Learning (PjBL) are (1) Social Media Enhances Collaboration and Communication; Platforms such as Facebook, WhatsApp, Instagram, and Google Classroom have been shown to strengthen peer interaction, facilitate project coordination, and accelerate the exchange of ideas and feedback. Social media enables more flexible and dynamic collaboration across time and space; (2) Support for 21st-Century Skill Development Social media fosters the development of critical 21st-century skills—including problem-solving, critical thinking, creativity, and digital literacy—within a PjBL environment; (3) Student participation increased as social media provided a familiar and enjoyable expressive space. Projects became more meaningful when final products could be shared publicly, enhancing students' sense of ownership and purpose; (4) Several challenges emerged, including distractions from learning, digital ethics concerns, time management issues, and the potential for platform misuse. These highlight the need for teacher guidance to ensure that social media use remains productive and educational; (5) The influence of social media was more prominent in language and arts disciplines, yet remains underutilized in STEM fields. Additionally, cultural contexts and technological infrastructure significantly affect the success of social media integration in PjBL (Chan & Ismail, 2014).

The seventeenth explores Implementing Free-Choice Project-Based Learning (FC-PjBL) for Sustainability Education are (1) Free choice project based learning (FC-PjBL) is a learning model that grants students the autonomy to select project topics based on their personal interests and concerns about sustainability issues, while remaining aligned with the principles and learning outcomes of the national curriculum. This student-driven approach emphasizes exploration, reflection, and real-world action, encouraging learners to take ownership of their learning processes; (2) FC-PjBL has been shown to significantly enhance students' action competence, including critical understanding of sustainability issues, reflective thinking, social empathy, and the capacity to take collective and responsible action. Students demonstrated increased environmental awareness, systems thinking skills, and long-term commitment to social change; (3) FC-PjBL can be flexibly integrated into the formal curriculum structure without

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compromising academic standards. Successful implementation requires teachers to act as facilitators rather than mere instructors, along with pedagogical training in Education for Sustainable Development (ESD) and transdisciplinary project design; (4) The model supports the achievement of SDG 4.7, which promotes education for sustainable development, global citizenship, and appreciation of cultural diversity. Student-led projects addressed critical themes such as climate change, gender equality, sustainable consumption, and social justice; (5) Several barriers were identified, including time constraints within the curriculum structure, the need for teacher training, resistance from highly standardized educational systems, and limited resources in schools (Kalla et al., 2022).

The eighteenth explains STEM Education in Supporting the SDGs are (1) STEM-based instruction has proven effective in enhancing students' understanding of sustainability concepts such as renewable energy, climate change, clean water, and industrial innovation (aligned with SDGs 6, 7, 9, and 13). When STEM learning is directly connected to real-world challenges relevant to the SDGs, students demonstrate improved analytical abilities and more contextualized comprehension of global issues; (2) The interdisciplinary design of STEM education enables the integration of scientific knowledge with social and environmental responsibility. Students become more reflective and critical of the ethical and sustainability implications of scientific technologies and innovations they study; (3) The interdisciplinary design of STEM education enables the integration of scientific knowledge with social and environmental responsibility. Students become more reflective and critical of the ethical and sustainability implications of scientific technologies and innovations they study; (4) Among the STEM fields, engineering- and technology-based instruction shows the greatest impact in linking learning to sustainability, as these areas typically involve the direct application of knowledge in real-world projects. Nevertheless, the success of such integration heavily depends on the quality of instructional design and the capacity of teachers to effectively incorporate SDG-related content; and (5) Key enablers include teachers' active participation in SDG-related training, flexible curricula, and interdisciplinary collaboration. In contrast, challenges include the lack of SDG-oriented teaching resources, limited teacher training in sustainability pedagogy, and the pressure to meet standardized academic outcomes, which can constrain meaningful integration of sustainability principles (Gutierrez De Blume et al., 2023).

The nineteenth describes Circular Economy Concepts in CPBL are (1) the incorporation of Circular Economy principles within Collaborative Project-Based Learning (CPBL) led to the successful development of product prototypes designed with circular strategies such as material reuse, energy efficiency, and waste minimization. CPBL enabled students to directly understand how design decisions impact environmental and social sustainability; (2) The study found a significant improvement in students' understanding of circular economy concepts, sustainable design competencies, and their ability to collaborate within multidisciplinary teams. Collaborative projects fostered data-driven decision-making and systemic thinking in product development processes; (3) CPBL proved effective in creating an active and participatory learning environment, where students were more engaged in exploration, discussion, and innovation based on real-world problems. Learning outcome evaluations indicated that this model was more successful than traditional instruction in cultivating a deep understanding of industrial sustainability principles; (4) The implementation of CPBL increased students' awareness of environmental and social issues associated with industrial production and consumption. The study observed a shift in students' attitudes regarding the social responsibility of engineers to develop sustainable solutions (González-Domínguez et al., 2020).

The twentieth describes SDGs in the Project-Based Merdeka Curriculum are (1) The study implemented a project-based learning (PBL) model in biotechnology that directly aligns students' competencies with the values of the Sustainable Development Goals (SDGs), particularly SDG 3 (Good Health and Well-being), SDG 4 (Quality Education), and SDG 12 (Responsible Consumption and Production). The projects encouraged students to explore the social and ecological implications of biotechnology applications, such as using microorganisms for waste treatment or healthy food production; (2) The application of PBL within the context of the SDGs significantly enhanced students' conceptual understanding of biotechnology topics. The study

also reported marked improvements in 21st-century competencies—critical thinking, creativity, communication, and collaboration (the 4Cs); (3) Project-based learning integrated with sustainability issues effectively fostered students' awareness of environmental and social concerns, particularly in their local contexts. It also strengthened their understanding of the role of science and technology in supporting sustainable living and instilled a greater sense of responsibility for science-based solutions; (4) The learning model was found to be highly compatible with the principles of the Merdeka Curriculum, which emphasizes flexibility, learner autonomy, and the development of the Profil Pelajar Pancasila (Pancasila Student Profile) (Purnomo et al., 2023).

The twenty first illustrates Student Engagement and Motivation om PBL are (1) significantly increased students' emotional and cognitive engagement in the learning process. Students reported feeling more motivated and responsible for their work, as the projects were contextualized and grounded in real-world problems, thereby fostering a sense of relevance and ownership; (2) PBL fostered a collaborative classroom atmosphere that enabled students to work in teams, exchange ideas, and solve problems collectively. The learning process shifted toward a student-centered approach, with teachers acting as facilitators rather than traditional transmitters of knowledge; (3) The study revealed notable improvements in students' critical thinking, problem-solving, communication, and collaboration skills. PBL also encouraged reflective and creative thinking throughout the stages of project development and implementation; (4) There was a significant enhancement in students' conceptual understanding and academic achievement when compared to those taught using conventional instructional methods, indicating the pedagogical effectiveness of PBL in fostering deeper learning outcomes (Almulla, 2020).

The twenty second depicts Integrating Business Simulation Games in a Flipped Classroom Setting to Enhance Student Engagement and Higher-Order Thinking Skills are (1) The implementation of business simulation games within a flipped classroom model significantly increased students' cognitive, affective, and behavioral engagement. Students participated more actively in discussions, reflective activities, and decision-making processes during face-to-face sessions; (2) Simulation-based activities effectively developed students' analytical, evaluative, and problem-solving skills. The interactive and complex environment created by the game encouraged strategic and critical thinking; (3) By creating real-world scenarios that required students to apply theoretical knowledge to practical situations, this approach brought learning closer to professional contexts. It reinforced the theory–practice connection, a core principle of sustainable education; and (4) The integration of flipped classroom strategies with business simulations fostered autonomous, reflective, and continuous learning. Students developed awareness of socio-economic dynamics and ethical responsibilities, aligning with the values of sustainability and the Sustainable Development Goals (SDGs) (C. Y. Hsu & Wu, 2023).

The twenty third elaborates Implementation of Project-Based Learning (PBL) in Logistics Engineering Education with a Refugee Camp Logistics Management Theme as the Project Context are (1) The PBL approach effectively enhances students' technical skills in logistics planning and supply chain management while simultaneously fostering social awareness and professional ethics, particularly within the context of humanitarian aid; (2) The learning process allows students to engage with complex, real-life logistical scenarios embedded with humanitarian concerns. It encourages them to critically consider sustainability factors, resource limitations, and urgent human needs in decision-making processes; (3) Students demonstrated significant improvement in higher-order thinking skills, including critical thinking, problem-solving, teamwork, professional communication, and data-driven decision-making under conditions of high uncertainty; (4) The study illustrates how Sustainable Development Goals—particularly SDG 4 (Quality Education), SDG 11 (Sustainable Cities and Communities), and SDG 13 (Climate Action)—can be effectively embedded into engineering curricula through project-based learning approaches (Terrón-López et al., 2020).

The twenty fourth explains This study examines web-based learning in English language instruction, focusing on how this approach supports the achievement of the Sustainable Development Goals (SDGs), particularly SDG 4: Quality Education. The study reveals four main findings: (1) The effectiveness of web-based English learning is demonstrated by increased

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accessibility and flexibility, especially in remote and resource-limited areas. Online platforms enable students to learn at their own pace, utilizing a variety of authentic materials such as videos, articles, and interactive forums; (2) Contribution to SDG 4 is evident in reducing educational disparities by providing equitable access to quality education, aligning with SDG 4 targets and facilitating the development of digital literacy and intercultural communication skills essential for the 21st century; (3) Enhanced learner engagement and motivation are shown through increased participation, motivation, and learner autonomy via web-based media compared to conventional methods. Activities such as interactive quizzes, discussion forums, and online collaborative projects foster active engagement; (4) Implementation challenges include uneven internet access, lack of teacher training, and digital divides among students from different socio-economic backgrounds. The study highlights the necessity of policy support and infrastructure development to ensure the effective and inclusive implementation of web-based learning (Doley, 2024).

Similarities include a shared emphasis on enhancing critical thinking, creativity, and 21st-century skills through educational approaches like Project-Based Learning (PBL). Most studies incorporate themes of sustainability and the Sustainable Development Goals (SDGs), employ interactive and student-centered methods to boost engagement and use interdisciplinary curricula to create holistic learning experiences. Differences arise in the specific focus and tools used. For example, Yamin et al. (2020) target junior high school students' creative thinking on water pollution using hands-on projects, unlike other studies exploring broader skills like digital literacy and using digital tools or educational games. Varying educational levels, from middle school to vocational studies, also influence skill complexity, and some studies apply localized, culturally integrated approaches, which Yamin's study does not emphasize. Overall, each article showcases unique adaptations of PBL tailored to the educational context, age group, and skills targeted.

DISCUSSION

This study makes a significant contribution to the field of English Language Teaching (ELT) by presenting a practical, technology-enhanced approach to integrating sustainability into language education. Building on the strong theoretical foundations laid by previous research such as Yu et al. (2024), which identified effective strategies like interdisciplinary curriculum design and teacher training, this study advances the field by implementing a concrete instructional model: Digital Project-Based Learning (DPBL). The significance lies in its ability to transform theoretical insights into actionable classroom practices where sustainability becomes a lived, interactive experience that not only enhances language competence but also raises students' awareness of global challenges. By addressing a crucial gap in the literature, this research demonstrates how ELT can meaningfully contribute to achieving the Sustainable Development Goals (SDGs), particularly SDG 4: Quality Education. Furthermore, by aligning ELT with digital innovation and real-world problem-solving, the study offers a replicable model for educators aiming to create transformative learning environments that prepare students for global citizenship. This study makes a significant contribution to the field of English Language Teaching (ELT) by presenting a practical, technology-enhanced approach to integrating sustainability into language education. Building on the strong theoretical foundations laid by previous research such as Yu et al. (2024), which identified effective strategies like interdisciplinary curriculum design and teacher training, this study advances the field by implementing a concrete instructional model: Digital Project-Based Learning (DPBL). The significance lies in its ability to transform theoretical insights into actionable classroom practices where sustainability becomes a lived, interactive experience that not only enhances language competence but also raises students' awareness of global challenges. By addressing a crucial gap in the literature, this research demonstrates how ELT can meaningfully contribute to achieving the Sustainable Development Goals (SDGs), particularly SDG 4: Quality Education. Furthermore, by aligning ELT with digital innovation and real-world problem-solving, the study offers a replicable model for educators aiming to create transformative learning environments that prepare students for global citizenship (Yu et al., 2024b).

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The emphasis of this study lies in the implementation of Digital Project-Based Learning (DPBL) as an English language teaching strategy that not only enhances students' interest and competence in reading, as demonstrated by the second article, but also explicitly aims to improve the quality of education in alignment with the Sustainable Development Goals (SDGs). While the second article highlights the effectiveness of PBL in fostering collaborative learning, critical thinking, and motivation within students' social and educational contexts without addressing the SDGs, this study underscores the integration of sustainable development objectives as a fundamental component of the learning approach. Therefore, this research expands the scope of DPBL application beyond a practical, student-centered language learning method to a meaningful contribution toward achieving SDG 4: Quality Education (Imbaquingo & Cárdenas, 2023). This study focuses on a structured approach that helps students improve important skills like digital literacy, critical thinking, and English as a foreign language. Students learn about the Sustainable Development Goals (SDGs) by designing sustainable homes with Tinkercad, building models from recycled materials, and coding interactive features. The project helps develop skills for the future and raises awareness about the environment. Its main goal is to prepare students to be responsible, eco-friendly citizens who can contribute to sustainable city development (Ribis, 2024b). This study focuses on improving email writing skills among rural EFL learners through a Facebook-based project. In the project, university English majors mentored ninth-grade students from rural areas for eight weeks, helping them write formal emails in English. By using Facebook as a learning tool, the study shows how digital platforms and peer mentoring can support language learning and reduce the education gap between urban and rural students. Various tools—like tests, writing tasks, questionnaires, and interviews—were used to measure students' progress and experiences. This study emphasizes the use of Project-Based Learning (PBL) to promote environmental awareness and sustainability education within an English for Academic Purposes (EAP) course at a Thai university. By integrating Elkington's Triple Bottom Line (TBL) framework—focusing on the social, ecological, and economic dimensions of sustainability—students explored key sustainability concepts while analyzing multinational companies. The project not only enhanced academic language skills but also encouraged students to reflect on and shift their environmental attitudes. This approach highlights the power of PBL in fostering both language development and a deeper understanding of global sustainability issues (Lin et al., 2022b). This study emphasizes the effectiveness of integrating digital teaching materials themed around sustainable lifestyles with an Ethno-Project-Based Learning (Ethno-PjBL) approach in the context of Indonesia's Merdeka Curriculum. Conducted with 10th-grade students in Jambi, the research shows that students exposed to Ethno-PjBL significantly outperformed those in conventional classrooms in both knowledge and creative thinking skills. By combining technology, project-based learning, and local cultural values, the study highlights how this approach enhances students' understanding of sustainable living while also fostering critical and creative thinking—key competencies in 21st-century education (Maharjan et al., 2022b).

This study focuses on the use of digital teaching materials about sustainable lifestyles combined with an Ethno-Project-Based Learning (Ethno-PjBL) approach in Indonesia's Merdeka Curriculum. Involving 10th-grade students in Jambi, the study found that those who learned through Ethno-PjBL showed better knowledge and creative thinking skills than those who had conventional lessons. By blending technology, local culture, and project-based learning, the study shows that this method helps students better understand sustainable living and encourages critical and creative thinking (Nanni & Allan, 2020b). This study emphasizes the use of Project-Based Learning (PjBL) to enhance junior high school students' creative thinking skills in addressing water pollution. Conducted in Bandung, Indonesia, the research shows that PjBL effectively helps students develop critical competencies needed to solve real-world environmental problems. Aligned with 21st-century education goals, the study highlights PjBL as a valuable strategy for promoting creativity and problem-solving skills. It suggests that broader implementation of PjBL in Indonesian schools could support students in building essential skills for the future.

The similarities and differences between our research and relevant previous research. The similarities are (a) use of Project-Based Learning (PBL/DPBL/PjBL) Approaches: All the studies utilized project-based learning models to enhance students' skills in the context of language learning, critical thinking, or environmental awareness; (b) integration of Technology in Instruction: Similar to studies involving tools such as Tinkercad, Facebook, and digital teaching materials, the present research also adopts a Digital PBL (DPBL) model. This reflects a shared trend toward the use of digital media to promote student engagement and mastery of 21st-century competencies; (c) development of 21st-Century Skills: All the reviewed studies emphasize the cultivation of critical skills such as critical thinking, creativity, collaboration, digital literacy, and problem-solving; (d) environmental Awareness and Sustainability: Several studies, such as those focusing on sustainable cities, sustainable lifestyles, and company analysis through the Triple Bottom Line framework, align with the central aim of the present study: to connect education with the Sustainable Development Goals (SDGs); (e) social and Contextual Relevance, these studies generally link instructional content to real-world issues within students' environments, including water pollution, rural educational disparities, and sustainable development. This mirrors the current study's goal of making English language learning meaningful and contextually relevant

Whereas, the differences are (a) explicit Focus on the SDGs: Only the current study explicitly positions the achievement of the Sustainable Development Goals—particularly SDG 4: Quality Education—as its core focus. While other studies may touch on sustainability issues, they do not systematically link them to the SDGs; (b) disciplinary Scope: The primary research concentrates on English Language Education within the framework of the SDGs. In contrast, other studies have broader or different foci, such as email literacy (one study), engineering education (systematic review), or environmental science education; (c) instructional Model Used: This research employs a Digital Project-Based Learning model that explicitly emphasizes the integration of technology and sustainability within an ELT context. Other studies utilize variations of PBL, such as Ethno-PjBL or projects via social media, but do not necessarily integrate all three elements—digital tools, language learning, and SDGs—as comprehensively; (d) population and Setting: The current study targets English language education with a global perspective. Other studies vary in participant demographics and settings, including middle school students in Indonesia, university students in Thailand, or broad literature reviews in engineering contexts; (e) depth of SDG Impact Assessment: This study places strong emphasis on the tangible contribution of English language learning to the achievement of SDG 4 as part of a broader educational transformation. Such explicit focus is not found in the other studies reviewed.

This research distinguishes itself through a holistic approach that integrates Digital Project-Based Learning, English Language Education, and the explicit objectives of the Sustainable Development Goals. While other studies share elements such as the use of technology, PBL frameworks, and a focus on sustainability, none of them strategically and systematically combine all three dimensions. Therefore, this study offers a unique contribution to the field by advancing the integration of language education, digital innovation, and sustainable development within a unified instructional framework. This study provides a significant contribution to the development of the field of English Language Teaching (ELT) through the implementation of a Digital Project-Based Learning (DPBL) approach that is explicitly integrated with the Sustainable Development Goals (SDGs), particularly SDG 4: Quality Education. This research brings together three essential components—digital technology, project-based learning, and education for sustainable development—into a single instructional model that is practical, replicable, and adaptable across various English language learning contexts.

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CONCLUSION

This study examines the use of digital project-based learning (PBL) in English education as a tool to achieve the Sustainable Development Goals (SDGs), specifically in providing quality education (SDG 4). The digital PBL method in English language learning enables students to develop English communication skills while utilizing technology. This digital PBL approach also helps students understand global issues through a practical approach relevant to real-life contexts, such as creating videos, blogs, or multimedia presentations. Through this approach, students improve their English skills and develop digital literacy and cross-cultural collaboration skills relevant to the 21st century. This article employs a systematic literature review method by collecting and analyzing articles from various academic sources, such as Scopus and Google Scholar, to map the use of digital PBL in English education and its relevance to achieving the SDGs. The results show that digital project-based learning not only increases motivation for learning English but also broadens access to global knowledge, thereby strengthening the contribution of English education toward the SDGs. There are three advanced research recommendations (a) Future studies should examine how Digital Project-Based Learning (DPBL) influences students' empathy, social responsibility, and emotional engagement with global issues. Understanding its impact on affective domains can deepen the relevance of DPBL in holistic education; (b) Researchers are encouraged to compare the implementation of DPBL across different countries—particularly between developed and developing nations—to explore the influence of digital infrastructure, learning culture, and national education policies on its effectiveness; (c) Further research should investigate whether there are differences in participation, engagement, and learning outcomes based on gender or socioeconomic background when implementing DPBL, to ensure equity and inclusivity in its application.

For further development recommendations are (a) It is recommended to create practical handbooks or training modules for English Language Teaching (ELT) professionals, providing step-by-step guidance on integrating SDG-themed digital projects into language instruction; (b) A specialized digital platform or Learning Management System (LMS) should be developed to support collaborative project implementation, progress tracking, and competency-based assessment aligned with DPBL methodologies; (c) Future development efforts should include the creation of DPBL model variations tailored for hybrid and fully online learning environments, ensuring flexibility and accessibility in various educational delivery modes.

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