Journal of Current Studies in SDGs
Homepage : https://journal.i-ros.org/index.php/JOCSIS
Email : jocsis@i-ros.org

e-ISSN 3089-7564
Vol.4, No.1, March 2028
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Advancing SDG 4 through Blended Learning: A Qualitative Case Study of Lecturers' and Students' Experiences in Non-EFL Reading Classroom

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DOI : https://doi.org/10.63230/jocsis.4.1.348

Sections Info

Article history:
Submitted: May 22, 2026
Final Revised: August 10, 2026
Accepted: October 8, 2026
First Available Online: November 18, 2026
Publication Date: March 27, 2028

Keywords:
Blended Learning;
Experiences;
Lecturers' and Students';
Non-EFL Reading Classroom;
SDG 4.

ABSTRACT

Objective: *The study explored how blended learning was implemented in English reading instruction for non-English-major university students, examined lecturers' and students' perceptions of its benefits and challenges, and considered how their experiences reflected opportunities and barriers to advancing Sustainable Development Goal 4 (SDG 4).* ***Method:*** *A qualitative case study was conducted in the Mathematics Education Study Program at UIN Madura, Indonesia, involving one English lecturer and 35 students. Data were collected through classroom observations, semi-structured interviews, and instructional documentation and examined using thematic analysis. The analysis focused on teaching practices, participants' experiences, and issues of accessibility and participation.* ***Results:*** *The findings described blended learning across pre-teaching, whilst-teaching, and post-teaching activities, combining classroom discussions and guided reading with online materials, assignments, and quizzes. Google Classroom supported access to reading resources, while Google Forms and YouTube supplemented comprehension practice. Participants perceived greater flexibility, opportunities to revisit difficult texts, increased confidence, and more independent reading. However, varying English proficiency, unfamiliar vocabulary, unstable internet access, limited digital skills, and inconsistent online participation constrained learning experiences. The lecturer responded through additional explanations, downloadable materials, group discussions, and flexible deadlines.* ***Novelty:*** *The study offers a context-specific account of blended English reading instruction within a mathematics education program, linking everyday teaching practices and participant experiences to the inclusive and equitable education aims of SDG 4. Rather than assuming that digital access guarantees inclusion, it highlights the simultaneous importance of instructional support, language needs, and technological conditions in shaping learning opportunities for students outside English language degree programs.*

INTRODUCTION

The quick changes in higher education during the digital age have greatly altered teaching methods, learning spaces, and how institutions work to offer fair and high-quality education to all. Universities face growing challenges in developing new teaching methods that meet students' diverse learning needs, promote active academic engagement, ensure accessible education for all, and maintain long-term educational effectiveness. In this context, Sustainable Development Goal 4 (SDG 4), which focuses on providing inclusive, fair, and high-quality education along with opportunities for lifelong learning for everyone, has emerged as a key framework for assessing educational innovations (Cahayana et al., 2026) . In 2025, the United Nations stated that global progress toward SDG 4 remains insufficient, especially in overcoming ongoing disparities in access to education, learning quality, and technological resources. In alignment with this perspective, the UNESCO Global Education Monitoring Report Team (2023) underscored that educational technologies must be designed to address learners' specific requirements and facilitate substantive pedagogical engagement, rather

than serving solely as substitutes for established instructional methodologies. These viewpoints emphasize the need to create instructional methods that use technology to improve the quality of education, increase student involvement, and ensure fair access for all. Consequently, blended learning has garnered significant attention as a potentially transformative pedagogical strategy capable of advancing the realization of Sustainable Development Goal 4 within modern higher education institutions (Haris & Mahir, 2025) .

Higher education has a deep sense of the pedagogical advantages of traditional classroom teaching and digital learning environments that are readily accessible and scalable, contributing to the scholarly interest in blended learning. Real blended learning is not about the uniform amalgamation of the physical and virtual instructional modalities: it is about a collective pedagogical structure, real student engagement, and an intentional integration of technology with the overall ecosystem of teaching and learning. (A systematic review of blended learning interventions in higher education by De Bruijn-Smolders and Prinsen (2024) found that the interventions studied demonstrated modest to high positive effects on students' engagement and academic achievement.) Similarly, Isteni (2024) asserts that blended learning is a mixed and heterogeneous learning environment where the learner interacts with educational materials using different kinds of learning. As a result, the advantages inherent in blended learning are not directly known; that is, they are contingent upon the effectiveness of teaching, the practical implementation of new teaching techniques, allowing the independent learning of students, and the institutional backing of the learners. For instance, when learners are not paired with a teaching method that uses technology for their learning, the knowledge is not only offered in the laboratory; rather, the interaction amongst teachers and their learners is a significant factor in the formation of blended learning.

Within the realm of higher education, reading instruction constitutes a fundamental pillar of academic pedagogy, as it empowers students not only to grasp disciplinary knowledge and decipher scholarly data but also to critically assess arguments and cultivate sophisticated analytical capabilities. University students must engage in reading independently, which includes reading textbooks, journal articles, research reports, and other academic materials. In the context of non-English as a Foreign Language (EFL) reading classes, this study defines reading instruction as learning that focuses on reading activities, which takes place within a course that is not mainly intended to teach English as a foreign language. These directives may encompass engaging with disciplinary literature, synthesizing conceptual frameworks, appraising evidentiary support, and articulating interpretive analyses within the confines of a particular academic discipline. Nevertheless, students may face issues such as intricate academic texts, inadequate reading motivation, insufficient collaborative interpretation, and differences in their ability to learn independently. Blended learning provides educational opportunities to tackle these challenges by enabling access to digital reading resources, allowing students to engage in reading activities at their own pace, participating in online discussions, and collaborating in person to interpret content together. A systematic review by De Bruijn-Smolders and Prinsen (2024) furnishes comprehensive evidence indicating that thoughtfully architected blended learning environments effectively foster both cognitive and behavioral engagement, whereas Pei et al.(2024) underscore the critical role of social interaction and collaborative learning activities within such hybrid educational frameworks. The outcomes offer a basis for examining how blended learning can enhance reading experiences in non-EFL academic settings, but its contribution necessitates contextual investigation.

Prior empirical research has consistently established that blended learning yields a beneficial impact on university students' academic perceptions, levels of engagement, and overall instructional experiences. Wu and Luo conducted a study in 2022, which aimed to explore the views of students and teachers on the use of Massive Open Online Courses (MOOCs) in an undergraduate English course. Their research showed that students mostly liked the flexibility, more interaction, better learning materials, and the chance to better understand the course content that blended learning offered. In a parallel investigation, Pei et al.(2024) executed a qualitative case study to analyze the perceptions held by both educators and learners regarding community development within the context of blended education. In their research, they found that blended learning environments necessitated collaborative learning activities and meaningful interpersonal relationships to foster a sense of camaraderie. The study also found some difficulties connected to group interactions, the way teachers and students relate to each other, and how digital communication tools are not very effective in helping with detailed academic discussions. Research indicates that the efficacy of blended learning transcends mere access to technological infrastructure, hinging instead upon the profound social and pedagogical relationships cultivated throughout instructional engagements. Despite the usefulness of these findings for teachers and students, more research is required to understand how such experiences develop in reading-oriented classes outside of traditional EFL instruction.

Studies that focus on blended learning in teaching reading have given valuable insights into how students experience and feel about their learning. In their 2022 study, Ismail and Edi investigated how students perceived the integration of problem-based learning with blended learning within an academic reading course for English as a Foreign Language at an Indonesian university. The study showed that students mostly had good feelings about the teaching method, especially how it could help with reading for learning. Conversely, learners encountered significant obstacles stemming from stringent time commitments, the financial burden of internet access, and the necessity for a robust foundational understanding. In another study, Yulianti and Purnawarman (2023) looked at how students felt about using blended media in their English reading lessons.They found that students had positive feelings about how much they were involved in learning, their interest in studying, and their overall attitude towards reading activities. In a recent study, Amrang and colleagues (2025) investigated the e-learning experiences of Indonesian university students enrolled in English literacy courses.Their findings highlighted significant benefits derived from learning flexibility and enhanced accessibility, while simultaneously uncovering substantial challenges related to unstable internet connectivity, limited opportunities for social interaction, deficiencies in digital literacy, and persistent obstacles in reading comprehension. When put together, these studies show how digital and blended learning methods can be useful in teaching reading skills. Nevertheless, the extant literature predominantly addresses English as a Foreign Language acquisition or literacy development, thereby establishing a foundational framework for subsequent inquiry into the lived experiences of blended learning within non-EFL reading curricula at the tertiary level.

Despite the potential benefits of blended learning, there are still instructional, technological, and institutional issues that may impact educational quality and inclusivity. Sareen and Mandal (2024) did a detailed review of existing research and found several challenges that make blended learning hard in college education.These challenges include students not being actively involved, problems with how courses are designed, not enough training for teachers, and issues with technology and support from the school. Their study also showed how important it is to look at the experiences of

various people involved in education when checking how well blended learning is working.

The growing scholarly interest in blended learning in higher education reflects the potential of integrating the pedagogical strengths of traditional face-to-face instruction with the flexibility, accessibility, and scalability of digital learning environments (McCarthy & Palmer, 2023). Concurrently, Banihashem et al.(2023) examined the attitudes, emotional states, and perceptions of both educators and learners within blended learning environments, identifying that flexibility serves as a catalyst for engagement, whereas excessive workloads and psychological pressures tend to undermine the quality of teaching and learning experiences. Based on these findings, blended learning should be viewed as a pedagogical process that is influenced by contextual conditions and stakeholder experiences, rather than as a technological advancement. From the view of SDG 4, these challenges are especially important because unequal access to technology, not enough help for teachers, and differences in people's digital skills can stop everyone from getting a fair and good education. Consequently, an examination of the obstacles encountered by both educators and learners within the context of blended reading pedagogy is paramount to comprehending the extent to which educational innovation can either facilitate or impede advancement toward Sustainable Development Goal 4.

While prior investigations have significantly advanced the comprehension of blended learning within higher education, notable lacunae persist within the examined corpus of literature. Existing research on reading instruction has overwhelmingly concentrated on English as a Foreign Language (EFL) pedagogy, English literacy acquisition, or the incorporation of discrete digital learning instruments, thereby generating a paucity of empirical evidence regarding blended learning methodologies within non-EFL reading contexts (Amrang et al., 2025; Ismail & Edi, 2022; Yulianti & Purnawarman, 2023). Second, even though studies have looked into how teachers and students see blended learning, most of these studies have focused on general learning experiences, how much students are involved in lessons, or how they interact with each other.They usually don't look closely at the specific teaching methods used when focusing on reading in different subjects (Pei et al., 2024; Wu & Luo, 2022). Furthermore, while extant scholarship has substantially illuminated the efficacy and implementation impediments of blended learning, there remains a paucity of inquiry dedicated to articulating the lived experiences of educators and learners through the lens of SDG 4's interconnected pillars of educational quality, inclusion, and equity (De Bruijn-Smolders & Prinsen, 2024; Sareen & Mandal, 2024). The inadequacies imply the necessity for context-sensitive qualitative research that evaluates blended learning as an educational experience rather than merely as an instructional delivery model. So, looking into how teachers and students feel about reading classes that aren't in English may help us better understand how blended learning helps improve education in certain college settings.

Bridging these deficiencies necessitates a qualitative research methodology, one adept at dissecting the multifaceted intricacies of instructional strategies, the nuanced perspectives of participants, and the contextual variables that shape the deployment of blended learning environments. Quantitative studies and systematic reviews offer evidence on instructional effectiveness, student engagement, and educational outcomes, but they do not always provide a comprehensive explanation of how teachers and students interpret their experiences or how to navigate challenges in specific classrooms. Pei et al.(2024) highlight the importance of using qualitative case study research to explore interactions, perceptions, and the impact of context in blended learning environments.Meanwhile, Sareen and Mandal (2024) stress the necessity of considering

broader stakeholder viewpoints when analyzing challenges related to implementation. In reading instruction contexts outside of English as a Foreign Language settings, educators may encounter blended learning manifested through instructional design, the curation of reading texts, the orchestration of digital resources, and the facilitation of classroom discourse. In the meantime, students can encounter the same learning environment due to reading accessibility, comprehension challenges, independent learning responsibilities, collaborative engagement, and technological requirements. It is important to examine these possibly differing viewpoints in order to find where teaching goals align with or differ from the actual learning experiences. Consequently, a qualitative case study affords a profound comprehension of the interplay between pedagogical strategies, learner perspectives, and environmental factors, thereby yielding critical insights into how blended reading instruction may be structured to foster substantive engagement and ensure equitable access to learning.

The originality of this study is reflected in its contributions to the field of blended learning research in higher education, specifically through its context, methods, and ideas. The research concentrates on non-EFL reading courses in a contextual manner, extending the examination beyond the traditional English language learning environments highlighted in previous reading-related studies (Ismail & Edi, 2022; Yulianti & Purnawarman, 2023). The study uses a qualitative case study method to combine the viewpoints of teachers and students, aiming to create a detailed understanding of how blended learning is implemented in the context, including the teaching methods used, the advantages that are seen, and the difficulties that arise. The study conceptualizes blended reading instruction as a crucial aspect of SDG 4, which emphasizes the importance of providing quality learning experiences, inclusive educational participation, and equitable access to learning resources. This study does not assume that integrating technology automatically leads to progress in sustainable educational development.Instead, it explores how blended learning approaches can either help achieve or limit these goals in real classroom settings. This viewpoint aligns with UNESCO's 2023 stipulation that educational technologies must be assessed through the lenses of learner requirements, educational pertinence, equity, and sustainability. The aim of the research is to offer a more comprehensive understanding of blended learning by connecting the experiences of stakeholders in non-EFL reading instruction to the broader educational commitments outlined in SDG 4.

Based on the explanation above, the study is conducted to investigate the experiences of the lecturer and students in implementing blended learning within non-English as a Foreign Language (non-EFL) reading class at the higher education level. It also seeks to analyze how these experiences connect to the achievement of Sustainable Development Goal 4. To accomplish these goals, the study explores three key research questions: first, how blended learning is applied in non-EFL reading class at the higher education level; second, how the lecturer's and students' perceptions regarding the advantages and disadvantages of using blended learning in non-EFL reading teaching; and third, how the lecturer's opportunities and challenges for promoting SDG 4 in higher education. This research is expected to provide contextually grounded insights into the pedagogical and institutional conditions that shape the implementation of blended learning through qualitative case studies. The results are expected to help create more adaptable, inclusive, and sustainable methods for teaching reading, and they will also support academic conversations about how blended learning can improve the quality of education in higher education settings.

RESEARCH METHOD

Research design

This study employed a qualitative research approach using a case study design to explore lecturers' and students' experiences of blended learning implementation in non-English as a Foreign Language (non-EFL) reading classes within higher education. A qualitative approach was considered appropriate because the study sought to understand participants' perceptions and interpretations of blended learning practices within their authentic educational contexts rather than to measure predetermined relationships between variables. Creswell and Poth (2024) explain that qualitative inquiry enables researchers to investigate complex educational phenomena by exploring participants' perspectives, contextual conditions, and the meanings constructed through their experiences. Accordingly, a case study design was adopted to facilitate an in-depth investigation of how the lecturer and students perceived the benefits and disadvantages of blended learning and how the lecturer's experiences reflected opportunities and challanges associated with advancing Sustainable Development Goal 4 (SDG 4), particularly inclusive, equitable, and quality education.

Research setting and participants

The research is situated in a higher education institution where blended learning is implemented in Mathematic education study program of UIN Madura. The participants consist of 35 students. Participants are selected through purposive sampling based on their direct involvement in the implementation of blended learning in non-EFL reading instruction. This sampling strategy is considered appropriate for qualitative case study research because it prioritizes participants who possess relevant experiences and can provide information-rich accounts of the phenomenon being examined (Creswell & Poth, 2024). Meanwhile, the participation of 35 students provides opportunities to examine diverse learning experiences, including perceived benefits, reading engagement, technological accessibility, and difficulties in navigating face-to-face and online learning environments. Furthermore, the involvement of the lecturer and students supports a more comprehensive understanding of how blended learning practices relate to the principles of quality, equitable, and inclusive education associated with SDG 4.

Data collection

Data will be collected through three complementary techniques namely classroom observation, semi-structured interviews, and documentation. The integration of these techniques is intended to provide a comprehensive understanding of blended learning implementation and to capture the experiences of lecturers and students from different sources of evidence. Creswell and Poth (2024) explain that qualitative case studies commonly incorporate multiple forms of data to develop a contextualized understanding of the phenomenon being investigated. Classroom observation will be conducted to examine how blended learning is implemented in face-to-face and digitally mediated reading activities. These observation aimed to provide contextual evidence of how blended learning was implemented and experienced in English reading instruction among mathematics education students (Creswell & Guetterman, 2025). The observations focused on instructional strategies, lecturers' facilitation of reading tasks, students engagement, classroom interaction, participation patterns, and the integration of online learning resources.

Moreover, Interview is a qualitative data collection technique involving direct interaction between researchers and participants to explore their experiences, perceptions, and perspectives through purposeful questioning (Sugiyono, 2023).

According to Tisdell et al. (2025), interviews enable researchers to gain an in-depth understanding of participants' experiences within a particular social and educational context. In this study, semi-structured interviews were conducted to explore the lecturer's and 35 mathematics education students' experiences, perceived benefits, disadvantages, and challenges and opportunities of implementing blended learning in English reading instruction. An English lecturer is invited to participate in individual interviews focusing on instructional preparation, teaching experiences, perceived pedagogical benefits, technological challenges, and strategies for accommodating diverse students needs. While students interviews will be conducted with purposively selected participants from 35 students to explore their experiences of accessing digital reading materials, participating in online and face-to-face activities, developing reading comprehension, managing independent learning responsibilities, and overcoming instructional or technological difficulties. Semi-structured interviews are appropriate because they allow the researcher to maintain consistency in the main areas of investigation while providing flexibility for participants to elaborate on their experiences and introduce contextually relevant issues (Creswell & Poth, 2024). The interviews was audio-recorded with participants' consent, transcribed, and organized for subsequent analysis.

Documentation analysis will complement the observational and interview data by examining instructional materials and institutional records relevant to blended learning implementation. The documents may include course syllabi, semester learning plans, reading materials, instructional slides, learning management system resources, online assignments, discussion records, assessment guidelines, and students learning activities. These materials was examined to understand how face-to-face and online reading activities are designed, organized, and integrated into the instructional process. The integration of observation, interview, and documentation data will enable the researcher to examine the relationships between planned instruction, actual classroom practices, and participants' reported experiences.

Data analysis

The data in this qualitative case study were analyzed using reflexive thematic analysis to explore the lecturer's and students' experiences of blended learning in English reading instruction at the Mathematics Education Study Program of UIN Madura, Indonesia. The analysis focused on qualitative data collected through classroom observations, semi-structured interviews, and documentation involving one English lecturer and 35 undergraduate students. Following Byrne (2022), the analytical process consisted of six stages: familiarization with the data, generating initial codes, constructing themes, reviewing themes, defining and naming themes, and producing the final report. The data were systematically examined to identify meaningful patterns related to participants' perceptions, learning experiences, reading activities, and challenges in implementing blended learning. De Bruijn-Smolders and Prinsen (2024) emphasized the significance of blended learning in promoting student engagement and learning outcomes in higher education. Therefore, Furthermore, Cao et al. (2024) emphasized that students' perceptions, learner autonomy, instructional support, and the integration of online and face-to-face activities are important considerations in evaluating blended learning experiences.

Finally, the developed themes were interpreted to examine how blended learning practices and the lecturer's experiences reflected opportunities and challenges in advancing Sustainable Development Goal 4 (SDG 4), particularly in promoting inclusive, equitable, and quality education. Furthermore, van der Stap et al. (2024) highlighted the

importance of teacher presence, collaborative activities, and online feedback in supporting meaningful interactions within blended learning environments. These perspectives informed the interpretation of the lecturer's experiences the opportunities and challenges associated with blended English reading instruction. To enhance the credibility of the analysis, data triangulation was conducted by comparing interview responses, classroom observations, and relevant learning documents.

Triangulation is a qualitative research strategy that involves combining multiple data sources and methods to develop a more comprehensive and credible understanding of a research phenomenon (Flick, 2022). In qualitative research, triangulation helps researchers compare different forms of evidence and strengthen the trustworthiness of their interpretations (Silverman, 2024). In this study, triangulation was applied by comparing interview data from one English lecturer and 35 mathematics education study program students with classroom observations and instructional documents to explore their experiences of blended learning in English reading instruction. Finally, the emerging themes were interpreted in relation to Sustainable Development Goal 4 (SDG 4), particularly its emphasis on inclusive, equitable, and quality education in higher education.

Trustworthiness

The trustworthiness of this qualitative case study was addressed through four essential criteria: credibility, transferability, dependability, and confirmability. These criteria are important for ensuring the methodological rigor and transparency of qualitative research. As emphasized by Novak and Jen (2024), trustworthiness requires researchers to demonstrate that their findings accurately represent participants' experiences through appropriate and transparent research procedures. In this study, credibility was addressed through data triangulation by comparing information obtained from semi-structured interviews, classroom observations, and instructional documents involving one English lecturer and 35 students in the Mathematics Education Study Program at UIN Madura, Indonesia.

Furthermore, dependability was addressed through systematic documentation of data collection, coding procedures, and thematic analysis to maintain consistency and transparency throughout the research process. Confirmability was supported through reflexive examination of the researcher's interpretations and their relationship to the empirical evidence. Lochmiller et al. (2026) highlight that triangulation, thick description, audit trails, and researcher reflexivity are essential strategies for strengthening the trustworthiness of qualitative investigations. Therefore, these procedures provided a methodological framework for developing credible, transparent, and contextually grounded interpretations of lecturers' and students' experiences, particularly regarding the opportunities and challenges of blended learning in supporting inclusive and equitable quality education under Sustainable Development Goal 4 (SDG 4).

RESULTS AND DISCUSSION

This section presents the findings from a qualitative case study examining the implementation of blended learning in English reading instruction for non-English major students in the Mathematics Education Study Program at UIN Madura, Indonesia. The study was conducted during the fall semester of the 2026/2027 academic year, spanning a three-month period from August to October 2027. Based on data collected through classroom observations, semi-structured interviews with one English lecturer and 35 students, and instructional documentation, the findings are organized according to three research questions.

First, the study examines how blended learning is implemented in English reading classes for non-English majors in higher education, specifically through the integration of face-to-face and online learning activities. Second, it explores the perceptions and experiences of both the lecturer and the students regarding the benefits and challenges of blended learning in developing English reading skills. Third, it investigates how blended learning practices and the participants' experiences reveal opportunities and challenges for advancing Sustainable Development Goal 4 (SDG 4), particularly in promoting inclusive, equitable, and quality education within higher education.

Results

The implementation of blended learning in non-EFL reading class at the higher education level

The lecturer's account described the implementation of blended learning in English reading instruction for undergraduate students in the Mathematics Education Study Program at UIN Madura, Indonesia. The instructional process integrated face-to-face classroom activities with online learning facilitated through a Learning Management System (LMS)(Hidayati et al., 2025). The lecturer described blended learning as an instructional arrangement in which classroom meetings were used to explain reading strategies, discuss unfamiliar vocabulary, and guide students in understanding English texts, while online learning activities provided opportunities to access materials, complete assignments, and review lessons independently.

The implementation was organized into three instructional stages: pre-teaching, whilst-teaching, and post-teaching. These stages involved different reading activities and digital learning resources to facilitate students' participation throughout the learning process. The lecturer explained:

> *"I implemented blended learning by combining face-to-face classroom instruction with online learning activities. During classroom meetings, I explained reading strategies, discussed unfamiliar vocabulary, and guided students in understanding English texts. Meanwhile, online learning activities allowed students to access reading materials, completed reading assignments, and reviewed lessons independently."*

During the ***pre-teaching stage***, the lecturer described several activities intended to prepare students before engaging with English reading texts. Classroom activities began with greeting students, checking attendance, explaining learning objectives, and introducing the reading topic. The lecturer activated students' background knowledge through brainstorming activities and questions related to their academic experiences in mathematics education. Moreover, based the result of observation, the lecturer introduced essential vocabulary and explained reading strategies, particularly skimming and scanning, to familiarize students with the reading activities. The preparation process was also supported by online learning activities before classroom meetings. While the result of documentation, it was found that reading materials in PDF format, PowerPoint presentations, vocabulary lists, and introductory YouTube videos were uploaded to the LMS, enabling students to access the materials and prepare for subsequent classroom discussions. This findings was supported by the result of interviewed to the lecturer stated:

> *"Before the face-to-face meeting, I also upload PDF reading materials, vocabulary lists, and introductory YouTube videos to Google Classroom. Students are expected to access these resources, read the materials, and identify unfamiliar words before participating in classroom discussions."*

In the ***whilst-teaching stage*** was described as the main instructional phase in which students participated in reading comprehension activities through individual, collaborative, and technology-supported learning. It was found from the result of observation. During face-to-face meetings, the lecturer guided students in reading English texts, identifying main ideas and supporting details, locating specific information, and interpreting unfamiliar vocabulary. Students were also involved in small-group discussions to exchange interpretations, analyze difficult sentences, and answer reading comprehension questions. Throughout these activities, the lecturer monitored students' participation and provided explanations when they encountered difficulties understanding reading passages. The lecturer's account emphasized the integration of individual reading practices with collaborative classroom activities, as reflected in the following statement:

> "*First, I asked students to read English texts individually and identified the main ideas, supporting details, and specific information. Next, I organized small-group discussions in which students collaboratively analyzed paragraphs, interpret difficult sentences, and answer reading comprehension questions.*"

In addition to face-to-face instruction, the whilst-teaching stage incorporated online learning activities through Google Classroom and several supplementary digital applications. Google Classroom was described as the main platform for distributing reading materials, organizing assignments, collecting students' work, and providing instructional feedback. Google Forms was used to deliver reading comprehension quizzes, while YouTube videos provided additional explanations of reading strategies and academic English vocabulary. The document also described the use of online discussion forums and Google Docs for collaborative reading activities.

Furthermore, Google Meet was occasionally used to conduct synchronous discussions and explain difficult reading materials. Through these digital platforms, reading instruction extended beyond classroom meetings and included individual assignments, online discussions, and independent reading practice. The lecturer explained:

> "*For the online learning component, I distribute reading assignments and comprehension exercises through Google Classroom. Students access digital texts, answer questions using Google Forms, and submit their assignments through the LMS.*"

The ***post-teaching stage*** focused on evaluating students' understanding, reviewing reading activities, and providing follow-up learning opportunities. Following the reading sessions, the lecturer asked students to summarize the main ideas of the texts, identify important vocabulary, and reflect on the difficulties they experienced during reading activities. The lecturer also reviewed students' comprehension exercises, clarified misunderstandings, and provided corrective feedback on their answers. These classroom activities were followed by online assignments through Google Classroom, including written summaries, additional reading exercises, and comprehension quizzes administered using Google Forms. Students were encouraged to review previously uploaded materials and complete supplementary reading activities independently. This stage was described by the lecturer as follows:

> "*During the post-teaching stage, I evaluated students' reading comprehension by reviewing their answers and discussing the main points of the texts. I invited students to summarize the reading passages, reflected on difficulties they encountered, and shared the reading strategies they found useful.*"

The lecturer's account also described the selection of reading materials as an important component of blended learning implementation. Since the participants were mathematics education study program students, the lecturer considered students' academic backgrounds, English proficiency levels, vocabulary knowledge, and reading comprehension abilities when selecting instructional materials. The reading texts included topics related to mathematics education, teaching strategies, and general educational issues. These materials were presented through classroom instruction and digital learning resources, allowing students to encounter English reading texts connected to their academic discipline. The lecturer stated:

> *"Since they are mathematics education students, I sometimes use texts related to mathematics education, teaching strategies, and educational issues. I also consider vocabulary complexity, text length, and students' reading comprehension abilities."*

Overall, the documented lecturer account described blended learning implementation as a structured instructional process involving preparation, guided reading activities, online learning participation, assessment, and follow-up instruction. Face-to-face learning was used primarily for explaining reading strategies, facilitating discussions, guiding text comprehension, and providing direct feedback. Meanwhile, online learning through Google Classroom and supplementary digital applications was used to distribute learning resources, administer reading exercises, organize discussions, and collect assignments. Across the three instructional stages, the lecturer described various activities intended to support students' engagement with English reading materials both inside and outside the classroom.

The perceptions of the lecturer and students regarding the advantages and disadvantages of blended learning in developing English reading skills

The lecturer's perceptions

The findings from the lecturer's interview revealed a generally positive perception of blended learning in developing English reading skills among mathematics education students at UIN Madura. The lecturer considered blended learning an effective instructional approach because it provided advantages to combine direct classroom instruction with independent online reading activities. In particular, the lecturer emphasized that face-to-face learning allowed students to receive explanations of reading strategies and unfamiliar vocabulary, while online learning enabled them to access materials and practice reading independently. The lecturer also recognized that students had different English proficiency levels, which influenced their ability to participate in reading activities. This perspective was reflected in the following statement:

> *"I think blended learning is very helpful for mathematics education students in developing their English reading skills. Students can learn reading strategies directly in the classroom and practice independently through online materials."*

Regarding teaching experiences, the lecturer described blended learning as a more flexible and engaging approach than conventional face-to-face instruction. The integration of classroom meetings and online activities allowed the lecturer to organize learning materials, provide reading assignments, and support students' comprehension through different instructional environments. During classroom sessions, the lecturer explained reading strategies, discussed difficult vocabulary, and guided students in understanding English texts. Meanwhile, Google Classroom was used to distribute learning materials and assignments, enabling students to continue their reading practice outside scheduled classroom meetings. The lecturer explained:

> *"In my experience, combining face-to-face and online learning makes teaching English reading more flexible and interesting. In the classroom, I explain reading strategies, discuss difficult vocabulary, and guide students in understanding texts."*

One of the main benefits identified in the interview was increased flexibility in students' learning experiences. The lecturer reported that online learning provided students accessed reading materials at any time, reread difficult passages, and completed reading exercises according to their individual learning pace. The lecturer also indicated that providing reading materials before classroom meetings helped students prepare for face-to-face discussions. Consequently, classroom activities could focus more on reading comprehension, clarification of difficult vocabulary, and collaborative discussions. The lecturer stated:

> *"It also saves classroom time because students can prepare before the lesson, so we can focus more on discussions and reading comprehension activities. I've noticed that some students become more active and independent in learning."*

Another finding concerned the lecturer's perception of students' reading comprehension development. The lecturer explained that blended learning supported students in identifying main ideas, recognizing supporting details, and understanding unfamiliar vocabulary through the combination of guided classroom instruction and independent online practice. Students could review reading passages before classroom discussions and use online dictionaries when encountering unfamiliar words. The lecturer perceived that it contributed to students' confidence in understanding English texts, although some students still required additional explanations and assistance. As the lecturer stated:

> *"During face-to-face sessions, I guide them in finding main ideas and supporting details, while online activities give them more practice. They can also use online dictionaries to understand unfamiliar vocabulary."*

The use of digital learning platforms was also described as an important component of the lecturer's teaching experience. Google Classroom functioned as the main Learning Management System (LMS) for distributing reading materials and organizing assignments, while Google Forms was used to administer reading comprehension quizzes. In addition, YouTube videos were incorporated to provide supplementary explanations of reading strategies and difficult vocabulary. The lecturer perceived these digital resources as useful for extending learning opportunities beyond the classroom and allowing students to revisit instructional materials independently. However, the lecturer acknowledged that the effectiveness of these activities was sometimes affected by internet connectivity problems. The lecturer explained:

> *"I used Google Classroom to share reading materials and assignments, Google Forms for reading comprehension quizzes, and YouTube videos to explain reading strategies. These tools helped students practice reading outside the classroom and understood the difficult texts better."*

The lecturer further highlighted students' growing independence and confidence as perceived advantages of blended learning. The availability of online reading materials allowed students to take greater responsibility for completing assignments, reviewing difficult texts, and using digital dictionaries to support comprehension. The lecturer observed that some students appeared more confident when answering reading comprehension questions and completing assignments without continuously requesting direct assistance. Nevertheless, this improvement was not experienced equally by all

students, as some continued to require instructional guidance and encouragement. The lecturer stated:

> *"I've noticed that some students are more confident in answering comprehension questions and completing assignments without always asking for my help. However, a few students still need guidance and encouragement."*

Despite these perceived benefits, the lecturer identified several disadvantages associated with implementing blended learning in non-English-major reading instruction. Differences in students' English proficiency levels were among the most prominent difficulties, particularly in relation to limited vocabulary knowledge and difficulties understanding English reading texts. The lecturer also reported technological barriers, including unstable internet connections and students' unfamiliarity with digital learning platforms. Furthermore, some students demonstrated lower participation in online discussions than in face-to-face classroom activities. These challenges required the lecturer to provide additional explanations and instructional assistance. As reported in the interview:

> *"Internet connection problems sometimes make it difficult for them to access online materials. A few students are also not familiar with using digital learning platforms. Besides, some students are less active during online discussions compared to face-to-face classes."*

To address these disadvantages, the lecturer described several instructional strategies intended to accommodate students' different learning needs. These included selecting reading materials appropriate to students' English proficiency levels, providing additional explanations, and organizing group discussions to encourage peer assistance. Students experiencing internet difficulties were provided with downloadable PDF reading materials and additional time to complete online assignments. The lecturer also assisted students who were unfamiliar with digital learning platforms. These strategies reflected efforts to maintain students' participation in both online and face-to-face reading activities despite differences in language proficiency and technological access. The lecturer explained:

> *"For students with internet problems, I provide downloadable PDF materials and give them more time to complete online assignments. I also guide students who are not familiar with using digital learning platforms."*

Overall, the lecturer's interview indicated that blended learning was perceived as a beneficial approach to English reading instruction because it expanded students' opportunities for independent reading practice, increased access to learning materials, and supported classroom interaction. At the same time, the lecturer recognized that differences in English proficiency, limited internet access, and inconsistent participation in online activities remained important challenges. The lecturer therefore recommended improving digital accessibility, providing more interactive reading activities, and strengthening instructional support for students who experienced reading difficulties.

The students' perceptions

The students interview responses indicated a generally positive perception of blended learning in English reading instruction within the Mathematics Education Study Program at UIN Madura. Basrd on the result of interview, blended learning was perceived as a flexible and engaging learning approach because it combined the advantages of face-to-face classroom interaction with opportunities for independent online learning. The students particularly valued the opportunity to receive direct explanations from the lecturer during classroom meetings while accessing reading

materials and completing learning activities outside the classroom. This combination was considered helpful in supporting English reading practice and encouraging independent learning. One student response stated:

> *"I think blended learning is really helpful and interesting because I can learn English reading both in the classroom and online. In class, I can ask the lecturer directly when I don't understand something, while online learning allows me to access reading materials and practice anytime."*

Regarding learning experiences, the interview responses described the integration of classroom discussions, the lecturer explanations, and digital reading activities as important components of blended learning. During face-to-face meetings, the students participated in reading discussions, received explanations about unfamiliar vocabulary and reading strategies, and interacted with classmates to understand English texts. Meanwhile, online learning activities were conducted through Google Classroom, which was used to access reading materials and submit assignments. Google Forms was used for reading comprehension quizzes, while YouTube videos provided supplementary explanations of reading strategies and difficult vocabulary. The interview response illustrated these experiences as follows:

> *"In the classroom, the lecturer explains reading strategies and difficult vocabulary, and we discuss texts with our classmates. For online learning, I use Google Classroom to access reading materials and submit assignments. I also watch YouTube videos and complete quizzes on Google Forms."*

One of the main perceived advantages of blended learning was the flexibility it provided in accessing and reviewing English reading materials. Unlike classroom-only instruction, online learning allowed the students to revisit difficult texts, search for unfamiliar vocabulary, and prepare for reading discussions before attending face-to-face sessions. It was particularly valued because it provided additional time to understand reading passages without depending entirely on classroom explanations. Nevertheless, they continued to consider face-to-face interaction important when direct clarification was needed. This perspective was reflected in the following statement:

> *"I can reread difficult texts, look up unfamiliar words, and watch YouTube videos to understand the lessons better. It also gives me more time to prepare before class. However, I still prefer face-to-face discussions when I need explanations from the lecturer."*

Another important finding concerned the perceived contribution of blended learning to English reading comprehension. The students reported that repeated access to online materials supported the process of identifying main ideas, recognizing supporting details, and understanding unfamiliar vocabulary. Classroom discussions and online exercises provided different opportunities to practice these reading skills, while online dictionaries were used to clarify difficult words. They also reported greater confidence in understanding English texts, although additional practice was still considered necessary. As expressed in the interview:

> *"I learn how to find main ideas and supporting details through classroom discussions and online exercises. When I find difficult words, I use online dictionaries or ask my lecturer for help. I feel more confident in understanding English texts now, although I still need more practice."*

The interview responses also indicated that motivation and participation were influenced differently by face-to-face and online learning activities. Classroom discussions were perceived as motivating because they allowed students to exchange

ideas, ask questions, and receive immediate explanations from the lecturer. The students reported feeling more confident participating in discussions after reviewing the reading materials beforehand. However, reduced direct interaction during online learning was also associated with lower motivation. This experience was described in the following statement:

> *"I feel more confident joining discussions when I've already read the materials. However, sometimes I feel less motivated during online learning because there is no direct interaction."*

In relation to learning independence, blended learning was perceived as providing opportunities to take greater responsibility for completing reading assignments. The students explained that online learning resources enabled independent reading practice, vocabulary exploration, and completion of assignments according to an individual learning pace. It increased confidence in answering comprehension questions, especially when online exercises were completed before classroom meetings. Nevertheless, independence did not eliminate the need for lecturer assistance, particularly when students encountered complex reading passages. The interview response stated:

> *"Blended learning makes me more confident and independent in reading English texts. I can study the materials by myself, look up difficult words, and complete assignments at my own pace."*

Despite these perceived advantages, the interview responses identified several disadvantages associated with blended learning. Difficult English vocabulary and lengthy reading texts remained obstacles to reading comprehension. Technological difficulties, particularly unstable internet connections, sometimes prevented timely access to learning materials and assignment submission. Although the students reported familiarity with Google Classroom, certain online learning activities were still considered confusing. Time management also emerged as a challenge, especially when several assignments had to be completed within a limited period. The students explained:

> *"One of my main difficulties is understanding difficult English vocabulary and long reading texts. Sometimes, I also have problems with unstable internet connections, which makes it hard to access materials or submit assignments on time."*

Supporting from the lecturer and classmates was identified as an important aspect of the student's blended learning experience. When difficulties occurred, the lecturer provided additional explanations of unfamiliar vocabulary and reading passages, while classmates assisted through discussions and group activities. Communication through Google Classroom also offered an additional opportunity to ask questions outside face-to-face meetings. They expressed a preference for collaborative learning when dealing with challenging reading materials. As stated in the interview:

> *"My classmates often help me understand the texts and complete group activities. I feel more comfortable learning when we can discuss problems together, especially when the reading materials are difficult."*

Regarding future improvements, the students recommended the use of more interesting reading materials, interactive comprehension quizzes, clearer explanations, and additional opportunities for classroom discussions and lecturer feedback. These suggestions reflected the importance placed on accessible reading resources and continuous instructional support. Although digital platforms provided learning flexibility, they continued to value direct interaction with the lecturer and classmates. The interview response emphasized:

> *"I suggest providing more interesting reading materials, interactive quizzes, and simpler explanations. I also hope the lecturer can give us more time for discussions and feedback."*

Overall, the students interview responses demonstrated that blended learning was perceived as beneficial for English reading instruction because it provided flexible access to learning resources, additional reading practice, and opportunities for independent learning. The combination of face-to-face instruction and online activities was particularly valued for supporting reading comprehension, vocabulary development, and confidence in completing assignments.

The lecturer's opportunities and challenges for advancing Sustainable Development Goal 4 (SDG 4)

The lecturer's account highlighted several opportunities and challenges associated with implementing blended learning to support Sustainable Development Goal 4 (SDG 4) in English reading instruction for Mathematics Education study program students at UIN Madura. The experiences described in the interview emphasized two major aspects of blended learning implementation namely expanding access to flexible and inclusive learning opportunities and addressing the linguistic and technological barriers that may limit students' participation. The lecturer perceived that integrating face-to-face instruction with online learning activities provided students with additional opportunities to access learning resources, develop reading comprehension, and participate in learning activities beyond conventional classroom meetings.

One of the main opportunities identified in the lecturer's response was the flexibility and accessibility of English reading materials through digital learning platforms. The lecturer explained that Google Classroom enabled students to access reading materials at different times and review learning resources according to their individual needs. This flexibility was considered particularly helpful for students who required additional time to understand unfamiliar vocabulary and complex English reading passages. Unlike classroom instruction that takes place within scheduled meetings, online learning allowed students to revisit materials and complete reading activities at their own pace. The lecturer explained:

> *"I think blended learning provides more opportunities for students to learn English reading in a flexible way. They can access reading materials anytime through Google Classroom and practice reading at their own pace."*

Another opportunity concerned the lecturer's perception that blended learning could encourage students' active participation and independent learning (Maulidiya et al., 2024) . The combination of online and face-to-face instruction allowed students to engage with reading materials independently while maintaining opportunities to interact directly with the lecturer and classmates. Students could prepare for classroom discussions by reviewing reading materials online, while face-to-face sessions provided opportunities to clarify difficult vocabulary and discuss reading comprehension questions. The lecturer associated these practices with the broader educational objectives of SDG 4, particularly the provision of more accessible and inclusive learning experiences. As stated in the interview:

> *"In my experience, combining online and face-to-face learning encourages students to participate more actively and become more independent. I believe this supports SDG 4 by providing more accessible and inclusive learning opportunities."*

Despite these perceived opportunities, the lecturer acknowledged several challenges that could affect the inclusiveness and effectiveness of blended learning. Differences in

students' English proficiency levels were identified as a major challenge, particularly because some students experienced difficulties understanding unfamiliar vocabulary and English reading texts. These differences meant that students did not always require the same level of instructional assistance. In addition, unequal internet access created difficulties for students who needed to access online learning materials and participate in digital learning activities. The lecturer also reported that some students demonstrated limited participation during online learning sessions. These challenges indicated that the availability of digital learning resources did not necessarily provide equal learning opportunities for all students. The lecturer stated:

> *"One of the main challenges is that students have different English abilities and not all of them have good internet access. Some students also struggle with difficult vocabulary and are less active during online learning."*

To address these challenges, the lecturer described several instructional strategies intended to accommodate students' diverse learning needs and technological conditions. These strategies included providing downloadable reading materials, giving additional explanations, extending assignment deadlines, and encouraging collaborative learning through group discussions. Downloadable materials were intended to help students continue learning when internet connectivity was limited, while additional explanations supported students experiencing difficulties understanding English reading texts. Group discussions also provided opportunities for students to assist one another in completing reading activities. The lecturer explained:

> *"To overcome these problems, I provide downloadable reading materials, give extra explanations, and allow more time for completing assignments. I also encourage group discussions so students can help each other."*

The lecturer further recognized that improving blended learning required continued attention to digital accessibility and instructional quality. Although online learning resources provided additional opportunities for independent reading practice, unreliable internet connectivity and differences in English proficiency remained obstacles to equitable participation. The lecturer therefore emphasized the need for better internet access and more interactive learning activities to ensure that students could participate meaningfully in both online and face-to-face learning environments. This concern was reflected in the following statement:

> *"I think better internet access and more interactive learning activities are still needed to make blended learning more inclusive and effective."*

Overall, the lecturer's account indicated that blended learning offered potential opportunities to support the educational principles associated with SDG 4 through flexible access to reading resources, independent learning opportunities, and the integration of online and face-to-face instructional activities. However, the experiences described also highlighted challenges involving unequal access to digital technology, differences in English language proficiency, and inconsistent participation in online learning. The lecturer's reported responses to these challenges reflected efforts to accommodate students with different learning needs through accessible materials, instructional guidance, flexible assignment arrangements, and collaborative activities. Accordingly, the account illustrated both the potential contribution of blended learning to more inclusive English reading instruction and the practical limitations that require attention when seeking to promote equitable and quality learning opportunities in higher education.

Discussion

The implementation of blended learning in non-EFL reading class at the higher education level

The findings of this study suggested that implementing blended learning in non-EFL reading instruction at UIN Madura involves a structured integration of face-to-face teaching and online learning activities rather than merely combining two instructional modes. The instructional process was organized into three interconnected stages namely *pre-teaching, whilst-teaching, and post-teaching*, each serving different pedagogical purposed in developing students' English reading skills. *During pre-teaching*, the lecturer introduced reading objectives, activated students' prior knowledge, and provided digital reading materials through Google Classroom to prepare students for classroom activities. This finding was consistent with McCarthy and Palmer (2023), who emphasized that effective blended learning in higher education requires a coherent pedagogical framework in which technology, instructional strategies, and learning objectives are intentionally aligned. Similarly, van der Stap et al. (2024) highlighted the importance of connecting online preparation with face-to-face learning activities to facilitate meaningful interaction and deeper learning. The present study extended these perspectives to a non-English-major context by illustrating how the systematic organization of learning activities can accommodate mathematics education students' linguistic and academic needs. Therefore, the findings indicate that the pedagogical effectiveness of blended learning depends not simply on the availability of digital platforms but on how online and classroom activities are meaningfully connected throughout the instructional process.

Another important finding concerned the integration of individual reading practices, collaborative discussions, and digital learning resources *during the whilst-teaching stage*. The lecturer facilitated reading comprehension activities involving skimming, scanning, identifying main ideas, recognizing supporting details, and interpreting unfamiliar vocabulary. These activities were complemented by online reading assignments, Google Forms quizzes, YouTube instructional videos, and collaborative learning tasks through the LMS. This instructional arrangement can be interpreted through the Community of Inquiry framework, particularly the interconnected roles of teaching presence, social presence, and cognitive presence in supporting meaningful learning experiences. As explained by van der Stap et al. (2024), effective blended learning environments promoted interaction through lecturer guidance, collaborative activities, structured online engagement, and timely feedback.

Furthermore, De Bruijn-Smolders and Prinsen (2024) found that blended learning approaches can positively influence students' academic, behavioral, cognitive, and affective engagement. These perspectives helped to explain the significance of combining lecturer-guided reading instruction with independent and collaborative activities in the present study. In particular, face-to-face discussions created opportunities for students to negotiate the meanings of English texts, while online resources extended opportunities for reading practice beyond classroom meetings. Thus, the integration of instructional guidance, peer interaction, and digital resources represents an important pedagogical feature of blended learning in non-EFL reading instruction.

The findings also highlighted the significance of *post-teaching activities* in supporting reading comprehension, reflection, and independent learning. At this stage, students were encouraged to summarize reading passages, review unfamiliar vocabulary, complete comprehension assessments, and reflect on their reading difficulties. These activities were supported by online assignments and lecturer feedback through Google Classroom and Google Forms, enabling students to revisit reading materials and

continue practicing outside scheduled classroom sessions. This finding is relevant to the systematic review conducted by De Bruijn-Smolders and Prinsen (2024), which identified the importance of active learning strategies and meaningful student engagement in blended learning environments. Moreover, Farmati et al. (2023) demonstrated the relevance of blended learning approaches in English for Specific Purposes instruction, particularly in responding to learners' academic and language-learning needs. In the present study, the selection of reading materials related to mathematics education, teaching strategies, and educational issues indicates an effort to connect English reading instruction with students' disciplinary backgrounds. Such contextualization is particularly important because mathematics education students learn English as a supporting academic subject rather than as their primary field of specialization. Accordingly, integrating discipline-related reading materials, independent online activities, and lecturer feedback may provide meaningful opportunities for students to develop reading comprehension strategies that are relevant to their academic learning contexts.

From the perspective of Sustainable Development Goal 4 (SDG 4), the findings provide insights into how blended learning practices may contribute to more accessible, inclusive, and quality learning opportunities in higher education. The availability of digital reading materials, instructional videos, online comprehension exercises, and flexible learning activities enabled students to access learning resources beyond conventional classroom boundaries. At the same time, face-to-face instruction remained essential for providing direct explanations, collaborative discussions, and individualized learning support. These findings correspond with McCarthy and Palmer (2023), who argued that the effectiveness of blended learning depends on the alignment of technological integration with broader pedagogical and institutional priorities. Similarly, van der Stap et al. (2024) emphasized that meaningful interaction and lecturer presence are crucial for maintaining engagement across online and face-to-face learning environments. In relation to SDG 4, the present study suggests that blended learning can create opportunities to support quality education by integrating flexible access to resources with structured instructional guidance. Nevertheless, accessibility should not be equated automatically with educational equity, since students may experience different technological and linguistic conditions. Therefore, the contribution of blended learning to SDG 4 should be understood in terms of its potential to promote inclusive participation, meaningful learning experiences, and relevant academic literacy development rather than as direct evidence of SDG 4 achievement. Overall, the study highlights the importance of pedagogically integrated blended learning practices in supporting English reading instruction among non-English-major university students.

The perceptions of the lecturer and students regarding the advantages and disadvantages of blended learning in developing English reading skills.

The perceptions of the lecturer

The findings of this study revealed that the lecturer perceived blended learning as a beneficial instructional approach for developing English reading skills among mathematics education students at UIN Madura. The integration of face-to-face instruction and online learning was considered particularly valuable because it combined direct pedagogical guidance with flexible opportunities for independent reading practice. The lecturer emphasized that classroom interactions facilitated explanations of reading strategies, vocabulary comprehension, and collaborative discussions, while online learning through Google Classroom enabled students to access materials and review difficult texts at their own pace. This finding aligns with Hughes (2025), who

conceptualized blended learning as a complex educational practice requiring meaningful integration of technological resources, pedagogical strategies, and institutional learning environments.

Similarly, McCarthy and Palmer (2023) emphasized that effective blended learning in higher education extends beyond the availability of digital technologies and requires a coherent pedagogical framework that aligns instructional activities with educational objectives. The present findings support these perspectives by demonstrating that the perceived benefits of blended learning were associated not merely with the use of digital platforms but with the complementary functions of online and face-to-face instruction. In the context of non-English-major students, this integration appeared particularly relevant because it enabled the lecturer to provide direct reading assistance while offering additional opportunities for students to practice independently according to their linguistic abilities.

Another important finding concerns the lecturer's perception that blended learning contributed to students' reading comprehension, engagement, confidence, and independent learning. The lecturer reported that students could repeatedly access English reading materials, use online dictionaries to understand unfamiliar vocabulary, and complete reading comprehension exercises before classroom meetings. These opportunities were perceived to help students identify main ideas, recognize supporting details, and participate more confidently in reading discussions. This finding is consistent with De Bruijn-Smolders and Prinsen (2024), whose systematic review highlighted the positive relationship between blended learning and students' academic, behavioral, cognitive, and affective engagement in higher education.

Furthermore, van der Stap et al. (2024) emphasized that meaningful interaction in blended learning depends on teaching presence, social presence, collaborative activities, and timely instructional feedback. These perspectives suggest that the lecturer's instructional practices can be interpreted through the interconnected roles of independent engagement and guided interaction. While online learning provided opportunities for self-paced reading and individual preparation, face-to-face discussions enabled students to clarify difficult concepts, exchange interpretations, and receive direct feedback. Therefore, the findings indicate that blended learning may facilitate reading development by combining flexible learning opportunities with meaningful instructional interaction. However, the reported improvement in students' reading comprehension and confidence should be understood as the lecturer's perception rather than evidence of objectively measured learning gains.

Despite these perceived advantages, the findings also revealed several challenges associated with implementing blended learning in non-English-major reading instruction, particularly differences in students' English proficiency, limited vocabulary knowledge, unstable internet connectivity, unfamiliarity with digital platforms, and inconsistent participation in online discussions. These difficulties suggest that access to digital learning resources does not necessarily guarantee equitable participation or effective learning experiences. Hughes (2025) emphasized that blended learning implementation is influenced not only by pedagogical design but also by technological, institutional, and contextual conditions.

Similarly, van der Stap et al. (2024) identified structured learning activities, lecturer presence, and collaborative interaction as important factors in addressing challenges related to online participation. In response to these difficulties, the lecturer reported providing downloadable PDF materials, additional explanations, flexible assignment deadlines, and peer-supported group discussions. These strategies illustrate an effort to accommodate students' diverse linguistic abilities and technological circumstances. From

the perspective of Sustainable Development Goal 4 (SDG 4), the findings suggest that blended learning may contribute to inclusive and equitable quality education when flexible digital access is accompanied by appropriate pedagogical support. Nevertheless, achieving these educational aspirations requires continued attention to digital accessibility, differentiated instruction, and meaningful student participation. Thus, the study highlights that the potential contribution of blended learning to SDG 4 depends not simply on integrating technology into English reading instruction but on ensuring that students with different learning needs have equitable opportunities to participate and develop their academic reading skills.

The perceptions of the students

The findings of this study revealed that students generally perceived blended learning as a flexible and supportive instructional approach for developing English reading skills in the Mathematics Education Study Program at UIN Madura. Students particularly appreciated the combination of direct explanations during face-to-face meetings and opportunities to access reading materials independently through Google Classroom, Google Forms, and YouTube. The ability to revisit difficult texts, identify unfamiliar vocabulary, and prepare for classroom discussions was perceived as beneficial for understanding English reading materials. These findings can be interpreted through Hughes's (2025) conceptualization of blended learning as a complex educational practice in which digital technologies, instructional activities, and learning environments must be meaningfully integrated. Similarly, McCarthy and Palmer (2023) argued that effective blended learning requires a coherent pedagogical framework rather than merely combining online technologies with conventional classroom instruction. The students' experiences in the present study supported these perspectives by illustrating how face-to-face interaction and online learning can serve complementary instructional functions. In particular, classroom instruction provided immediate clarification and lecturer guidance, whereas online learning extended opportunities for independent reading and repeated engagement with texts. This finding suggests that the educational value of blended learning in non-English-major reading instruction lies in its capacity to provide flexible learning opportunities while maintaining essential pedagogical support.

Another significant finding concerned students' perceptions that blended learning supported their reading comprehension, motivation, confidence, and learning independence. Students described how online reading materials and digital dictionaries allowed them to practice identifying main ideas, recognizing supporting details, and understanding unfamiliar vocabulary at their own pace. They also reported feeling more confident during classroom discussions when they had previously reviewed the reading materials online. These experiences are consistent with De Bruijn-Smolders and Prinsen (2024), whose systematic review demonstrated the potential of blended learning to support academic, behavioral, cognitive, and affective engagement in higher education. Furthermore, van der Stap et al. (2024) emphasized the importance of social presence, lecturer guidance, collaborative interaction, and meaningful connections between online and face-to-face learning activities. The present findings can therefore be interpreted in relation to the complementary roles of independent engagement and socially supported learning. While online activities provided opportunities for students to manage their reading practice independently, classroom discussions and lecturer feedback helped them clarify difficult concepts and maintain motivation. This interpretation highlights that students' confidence and autonomy may develop through the interaction between flexible digital learning opportunities and continuous instructional support. Nevertheless, these developments represent students' perceived experiences rather than objectively measured improvements in English reading proficiency.

Despite these perceived benefits, the findings also revealed several challenges, including limited English vocabulary, difficulties understanding lengthy reading passages, unstable internet connectivity, unfamiliar online learning activities, and problems managing multiple assignments. Students also reported lower motivation when online learning involved limited direct interaction with lecturers and classmates. These challenges indicate that technological access alone does not necessarily produce meaningful or equitable learning experiences. Hughes (2025) emphasized that successful blended learning depends on the interaction of pedagogical, technological, and institutional conditions, while van der Stap et al. (2024) highlighted the importance of structured interaction and social presence in sustaining student participation. Furthermore, van der Stap et al. (2024) identified the need for appropriate teaching strategies to address insufficient interaction with online learning content. In the present study, students' preference for collaborative discussions, clearer explanations, interactive quizzes, and regular lecturer feedback suggests that blended learning should balance independent digital activities with accessible instructional assistance. From the perspective of Sustainable Development Goal 4 (SDG 4), these findings highlight both opportunities and limitations in promoting inclusive and equitable quality education. Although blended learning expanded access to reading materials and provided flexible learning opportunities, differences in technological access and English proficiency remained potential barriers to participation. Therefore, the study suggests that advancing SDG 4 through blended learning requires not only the integration of digital resources but also sustained pedagogical support, equitable technological access, and learning activities responsive to students' diverse academic needs.

The lecturer's opportunities and challenges for advancing Sustainable Development Goal 4 (SDG 4)

The findings of this study revealed that the lecturer perceived blended learning as an important opportunity to advance Sustainable Development Goal 4 (SDG 4), particularly by expanding access to flexible, inclusive, and quality English reading instruction among mathematics education students at UIN Madura. The integration of face-to-face learning and digital platforms, particularly Google Classroom, enabled students to access reading materials beyond scheduled classroom meetings, revisit difficult texts, and complete reading activities according to their individual learning pace. These opportunities were considered especially beneficial for students who required additional time to understand unfamiliar vocabulary and complex English reading passages. This finding aligns with the UNESCO (2023) *Global Education Monitoring Report*, which emphasizes that educational technology can contribute to SDG 4 by expanding access to learning resources and supporting educational inclusion, provided that digital technologies are appropriately integrated into teaching and learning practices.

Similarly, Mayr and Oppl (2023) demonstrated that blended learning arrangements can expand educational opportunities for learners experiencing barriers to conventional higher education, particularly when online learning is complemented by appropriate face-to-face instructional support. Although their research focused on marginalized communities, its emphasis on accessible learning resources and instructional facilitation provides a relevant perspective for interpreting the present findings. The lecturer's experiences also suggest that blended learning can encourage independent reading practices and meaningful classroom participation when online activities are closely connected with lecturer-guided instruction. Accordingly, the findings indicate that blended learning offers potential contributions to SDG 4 by supporting flexible access, responsive instructional practices, and opportunities for students with different English

proficiency levels to participate in reading activities. However, these opportunities should be interpreted as context-specific indications of alignment with SDG 4 rather than direct evidence of achieving its targets.

Despite these opportunities, the findings also highlighted substantial challenges concerning equitable access to digital learning, differences in English proficiency, and inconsistent participation in online reading activities. The lecturer reported that unstable internet connections, limited vocabulary knowledge, and varying levels of digital familiarity sometimes prevented students from engaging effectively with online learning resources. These findings are consistent with Hidayah (2022), who identified unequal internet access, technological resources, digital skills, and participation as important dimensions of the digital divide in Indonesian educational contexts.

Furthermore, Sareen and Mandal (2024), through a systematic and integrative literature review, identified instructional design limitations, inadequate training, and passive learning as significant challenges affecting blended learning implementation across different higher education contexts. The present study provided a contextual illustration of these concerns, demonstrating that the availability of an LMS does not automatically guarantee equitable learning opportunities or meaningful student engagement. To address these challenges, the lecturer described providing downloadable reading materials, additional explanations, extended assignment deadlines, and collaborative discussions to accommodate students' diverse linguistic and technological needs. These practices correspond with UNESCO's (2023) emphasis on ensuring that digital technology supports learner-centered education and reduces, rather than reinforces, educational inequalities. From the perspective of SDG 4, the findings suggest that advancing inclusive and equitable quality education through blended learning requires more than technological integration; it also demands accessible learning resources, differentiated instructional support, and sustained opportunities for meaningful participation. Therefore, the study highlights the importance of addressing both pedagogical and technological barriers to ensure that blended English reading instruction benefits students with different learning abilities and digital access conditions.

CONCLUSION

Fundamental Finding: The fundamental findings of this study indicated that blended learning provides meaningful opportunities to support English reading instruction among non-EFL university students. The integration of face-to-face and online learning promotes flexible access to reading materials, student engagement, reading comprehension, and independent learning. However, challenges such as differences in English proficiency, limited digital literacy, unstable internet connectivity, and unequal student participation remain significant barriers. The lecturer's instructional support, collaborative activities, and accessible digital resources play important roles in addressing these challenges. Overall, blended learning demonstrates potential for advancing SDG 4 by promoting more inclusive, equitable, and quality learning experiences in higher education. **Implication:** Furthermore, the findings of this study have important implications for improving English reading instruction in higher education. Lecturers should integrate face-to-face and online learning activities to enhance students' engagement, reading comprehension, and independent learning. Universities should provide accessible digital resources, reliable internet connectivity, and adequate technological support. Furthermore, inclusive instructional strategies are essential to accommodate students' diverse learning needs and promote equitable, accessible, and quality education aligned with SDG 4. **Limitation:** This study was limited

only to an English lecturer and 35 Mathematics Education study program students at UIN Madura. **Future Research:** Finally, future research should involve larger and more diverse participants from different academic disciplines and universities. Mixed-methods or experimental approaches are recommended to examine the effectiveness of blended learning in improving English reading skills. Further studies should also explore digital accessibility, students engagement, and inclusive learning practices to support SDG 4.

AUTHOR CONTRIBUTIONS

S. Sumihatul Ummah MS: Conceptualization, Methodology, Investigation, Formal Analysis, Data Curation, and Writing – Original Draft; **Syafi'ul Anam**: Methodology, Supervision, and Writing – Review & Editing; **Slamet Setiawan**: Supervision, Validation, and Writing – Review & Editing. All authors have reviewed and approved the final version of this manuscript.

CONFLICT OF INTEREST STATEMENT

The authors confirm that there are no conflicts of interest, either financial or personal, that may have influenced the content or outcome of this study.

ETHICAL COMPLIANCE STATEMENT

This manuscript complies with research and publication ethics. The authors affirm that the work is original, conducted with academic integrity, and free from any unethical practices, including plagiarism.

STATEMENT ON THE USE OF AI OR DIGITAL TOOLS IN WRITING

The authors acknowledge the use of ChatGPT, developed by OpenAI, as a supplementary language assistance tool during the preparation of this manuscript. Its use was limited to refining academic language, correcting grammatical errors, and enhancing the clarity, coherence, and readability of the text. The AI tool did not contribute to the research design, data collection, data analysis, interpretation of findings, or production of research results. All AI-assisted content was thoroughly examined, verified, and revised by the authors to maintain accuracy, originality, academic integrity, and adherence to ethical research and publication standards. The authors retain full responsibility and accountability for the manuscript's content, findings, interpretations, and conclusions.

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