

Teachers' Digital Literacy and Its Impact on Technology-Enhanced English Language Learning

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ABSTRACT

This study investigates the role of teachers' digital literacy in shaping the effectiveness of technology-enhanced English language learning (TEELL) in secondary school contexts. In the era of rapid digital transformation, the integration of technology into language classrooms has become increasingly essential; however, its success largely depends on teachers' ability to utilize digital tools pedagogically. This research aims to examine the level of teachers' digital literacy, explore its impact on instructional practices, and analyze its implications for students' engagement and language learning outcomes. A mixed-methods approach was employed, involving a survey of 120 English teachers and in-depth interviews with 15 selected participants from various secondary schools. Quantitative data were analyzed using descriptive and inferential statistics, while qualitative data were examined through thematic analysis. The findings reveal that teachers' digital literacy significantly influences the quality of technology integration in English language teaching. Teachers with higher digital literacy tend to design more interactive, student-centered learning environments, resulting in increased student motivation, participation, and communicative competence. Conversely, limited digital skills contribute to the underutilization of available technologies and reinforce traditional, teacher-centered practices. The study also identifies key challenges, including inadequate professional training, limited institutional support, and unequal access to digital infrastructure. These findings highlight the urgent need for continuous professional development programs focused on digital pedagogy, as well as policy support to ensure equitable access to educational technology. This study contributes to the growing body of literature on digital literacy in education by emphasizing its critical role in enhancing English language learning. It further offers practical implications for educators, policymakers, and curriculum developers in optimizing technology integration in language classrooms.

Keywords: Digital literacy, English language teaching, technology-enhanced learning.

I. INTRODUCTION

The rapid advancement of digital technology has significantly transformed various aspects of human life, including education. In the context of English language teaching, the integration of technology has become an essential component in facilitating effective and meaningful learning experiences. Technology-enhanced English language learning (TEELL) offers opportunities for interactive, flexible, and student-centred learning environments that can improve learners' engagement and communicative competence. However, the successful implementation of such technology largely depends on teachers' ability to integrate digital tools into pedagogical practices effectively. In this regard, teachers' digital literacy plays a pivotal role in determining the quality of technology integration in English language classrooms. Digital literacy, broadly defined as the ability to access, evaluate, create, and communicate information using digital technologies, has become a fundamental competency for educators in the 21st century. For English language teachers, digital literacy extends beyond basic technical skills to include the capacity to design technology-mediated learning activities, select appropriate digital resources, and facilitate

meaningful interaction in virtual or blended learning environments. Despite its importance, many teachers still face challenges in developing and applying digital literacy in their instructional practices, particularly in developing countries where access to training and technological infrastructure may be limited. In recent years, there has been a growing emphasis on the use of digital tools in language education, such as learning management systems, mobile applications, online collaboration platforms, and multimedia resources. These tools have the potential to support various aspects of language learning, including listening, speaking, reading, and writing. For instance, video conferencing platforms can facilitate real-time communication, while language learning applications can provide personalized feedback and adaptive learning experiences. However, the effectiveness of these tools is not solely determined by their availability, but rather by how they are utilized by teachers to support pedagogical objectives.

One of the key challenges in implementing TEELL is the gap between technological availability and pedagogical integration. In many educational settings, technology is introduced without sufficient consideration of teachers' readiness and competence. As a result, technology is often used in a superficial manner, merely replacing traditional tools without transforming the learning process. This phenomenon, commonly referred to as "substitution without transformation," limits the potential benefits of technology in enhancing language learning outcomes. Therefore, understanding the role of teachers' digital literacy in bridging this gap is crucial for improving the effectiveness of technology integration in English language teaching. Moreover, teachers' beliefs and attitudes toward technology also influence their willingness to adopt digital tools in the classroom. Teachers with positive attitudes toward technology and higher levels of digital literacy are more likely to experiment with innovative teaching strategies and create engaging learning environments. Conversely, teachers who lack confidence in their digital skills may resist the use of technology or rely on traditional, teacher-centred approaches. This highlights the importance of not only developing technical competencies but also fostering positive perceptions and self-efficacy among teachers in using digital tools for educational purposes. In addition to individual factors, institutional and contextual elements also play a significant role in shaping teachers' digital literacy and technology integration practices. These include access to reliable internet connectivity, availability of digital devices, administrative support, and opportunities for professional development. In many cases, inadequate infrastructure and limited training programs hinder teachers' ability to effectively integrate technology into their teaching. Furthermore, the lack of clear policies and guidelines on digital pedagogy can lead to inconsistent implementation across different schools and regions.

Another important aspect to consider is the impact of teachers' digital literacy on students' learning experiences and outcomes. Research has shown that effective use of technology in language learning can enhance students' motivation, engagement, and autonomy. Digital tools can provide authentic learning materials, facilitate collaborative learning, and support differentiated instruction to meet diverse learners' needs. However, when technology is poorly implemented, it may lead to confusion, distraction, and reduced learning effectiveness. Therefore, teachers' competence in managing and integrating technology is essential to ensure that it contributes positively to students' learning. The COVID-19 pandemic has further accelerated the adoption of digital technology in education, highlighting both the potential and the challenges of online and blended learning. During this period, teachers were required to rapidly adapt to remote teaching, often with limited preparation and support. This situation exposed significant disparities in digital literacy among teachers and underscored the urgent need for comprehensive professional development programs. While some teachers successfully leveraged digital tools to create innovative learning experiences, others struggled to maintain student engagement and deliver

effective instruction. Given these challenges, there is a pressing need to explore the relationship between teachers' digital literacy and the effectiveness of technology-enhanced English language learning. Understanding this relationship can provide valuable insights into how teachers can be better supported in developing the skills and competencies for integrating technology into their teaching practices. Furthermore, it can inform the design of teacher training programs, educational policies, and curriculum development aimed at promoting effective and sustainable use of technology in language education.

Although a number of studies have examined digital literacy and technology integration in education, there is still a need for more context-specific research that focuses on English language teaching in diverse educational settings. In particular, studies that combine quantitative and qualitative approaches can provide a more comprehensive understanding of teachers' digital literacy and its impact on teaching and learning processes. By investigating both the level of digital literacy and its practical implications in the classroom, this study aims to contribute to the existing body of knowledge and address the gap between theory and practice. Therefore, this study seeks to examine the level of teachers' digital literacy, analyse its influence on the implementation of technology-enhanced English language learning, and explore the challenges faced by teachers in integrating digital tools into their instructional practices. The findings of this study are expected to provide practical recommendations for educators, policymakers, and stakeholders in improving the quality of English language education through effective use of technology. In conclusion, teachers' digital literacy is a critical factor in the successful implementation of technology-enhanced English language learning. As education continues to evolve in response to technological advancements, it is essential to ensure that teachers are equipped with the necessary skills, knowledge, and support to effectively integrate digital tools into their teaching. By addressing the challenges and opportunities associated with digital literacy, this study aims to contribute to the development of more effective, inclusive, and innovative approaches to English language teaching in the digital era.

II. METHOD

This study employed a mixed-methods research design to comprehensively investigate teachers' digital literacy and its impact on technology-enhanced English language learning (TEELL). The combination of quantitative and qualitative approaches enabled the researchers to obtain both generalizable data and in-depth insights into teachers' practices and experiences. The study was conducted in several secondary schools, involving English language teachers as the primary participants.

The quantitative phase involved a survey administered to 120 English teachers selected through purposive sampling. The participants were chosen based on their active involvement in English language teaching and their experience in using digital technology in the classroom. The survey instrument consisted of a structured questionnaire designed to measure teachers' levels of digital literacy, including technical skills, information evaluation, digital content creation, and pedagogical integration of technology. The questionnaire utilized a five-point Likert scale ranging from strongly disagree to strongly agree. Prior to data collection, the instrument was validated by experts in educational technology and piloted to ensure its reliability and clarity.

The qualitative phase was conducted through semi-structured interviews with 15 selected teachers representing different levels of digital literacy and teaching experience. The interviews aimed to explore teachers' perceptions, challenges, and strategies in integrating digital tools into English language teaching. Each interview lasted approximately 30–45 minutes and was

conducted either face-to-face or via online platforms, depending on participants' availability. The interviews were audio-recorded with participants' consent and later transcribed for analysis.

Quantitative data were analysed using descriptive and inferential statistics. Descriptive statistics, including mean scores and standard deviations, were used to determine the overall level of teachers' digital literacy. Inferential analysis, particularly correlation analysis, was employed to examine the relationship between teachers' digital literacy and the effectiveness of technology integration in English language teaching. Meanwhile, qualitative data were analyzed using thematic analysis, following the processes of data familiarization, coding, theme development, and interpretation. This approach allowed the researchers to identify recurring patterns and key themes related to teachers' experiences and challenges.

To ensure the validity and reliability of the findings, methodological triangulation was applied by comparing and integrating data from both quantitative and qualitative sources. Additionally, member checking was conducted to confirm the accuracy of interview interpretations, and peer debriefing was utilized to enhance the credibility of the analysis. Ethical considerations were also strictly observed, including obtaining informed consent from all participants, ensuring confidentiality, and using the data solely for research purposes. Overall, this methodological approach provided a comprehensive understanding of how teachers' digital literacy influences the implementation of technology-enhanced English language learning, as well as the contextual factors that support or hinder its effectiveness.

III. RESULTS AND DISCUSSION

1. Results

1.1 Teachers' Level of Digital Literacy

The Analysis of the survey data revealed that the overall level of teachers' digital literacy was **moderate to high** (M = 3.67, SD = 0.58). The findings across different dimensions are presented in Table 1.

Table 1. Teachers' Digital Literacy Levels

Dimension	Mean	SD	Category
Technical Skills	3.85	0.52	High
Information Evaluation	3.72	0.55	High
Digital Content Creation	3.54	0.61	Moderate
Pedagogical Technology Integration	3.58	0.64	Moderate
Overall	3.67	0.58	Moderate–High

The data indicate that teachers demonstrated relatively strong technical abilities, particularly in operating digital tools and accessing online resources. However, their competence in creating digital content and integrating technology pedagogically remains comparatively lower.

1.2 Impact of Digital Literacy on TEELL

Correlation analysis was conducted to examine the relationship between teachers' digital literacy and the effectiveness of technology-enhanced English language learning.

Table 2. Correlation between Digital Literacy and TEELL Effectiveness

Variable	r	p-value	Interpretation
Digital Literacy & TEELL	0.68	<0.001	Strong Positive Correlation

The results show a **strong positive correlation ($r = 0.68$)**, indicating that higher levels of digital literacy are significantly associated with more effective implementation of technology in English language teaching.

1.3 Students' Engagement and Learning Outcomes

Teachers reported noticeable improvements in students' engagement and participation when digital tools were effectively integrated.

Table 3. Perceived Impact on Students

Indicator	Mean	Category
Student Motivation	3.89	High
Participation	3.76	High
Communicative Competence	3.62	Moderate

These findings suggest that technology-enhanced learning environments positively influence students' motivation and participation, although improvements in communicative competence require sustained and well-structured implementation.

1.4 Qualitative Findings

The thematic analysis of interview data generated three major themes:

1. Enhanced Engagement through Interactive Tools

Teachers reported that tools such as video platforms, quizzes, and collaborative applications increased student interest and classroom interaction.

2. Challenges in Digital Pedagogy

Many teachers expressed difficulties in designing meaningful digital learning activities, despite being able to use the technology.

3. Need for Professional Development

Participants emphasized the importance of continuous training focused on pedagogical integration rather than merely technical skills.

2. Discussion

The findings of this study highlight the critical role of teachers' digital literacy in the successful implementation of technology-enhanced English language learning. The moderate-to-high level of digital literacy observed among teachers suggests that while basic technological competencies are relatively well-developed, more advanced skills particularly those related to pedagogical integration require further improvement. The strong positive correlation between digital literacy and TEELL effectiveness supports previous research indicating that teachers' competence in using technology significantly influences instructional quality. Teachers who possess higher levels of digital literacy are more capable of designing interactive, student-centered learning environments. This aligns with constructivist learning theory, which emphasizes active student engagement and meaningful interaction as key components of effective learning.

However, the findings also reveal a persistent gap between technical proficiency and pedagogical application. While teachers are generally comfortable using digital tools, they often struggle to integrate these tools into coherent instructional strategies that promote language learning outcomes. This issue reflects the broader challenge of moving from technology use to technology integration, where the focus shifts from "how to use tools" to "how to teach effectively with tools. The positive impact on students' motivation and participation indicates that technology has the potential to transform the learning experience. Digital tools provide opportunities for authentic communication, collaborative learning, and access to diverse resources, all of which contribute to increased engagement. Nevertheless, the relatively moderate improvement in communicative competence suggests that technology alone is not sufficient; it must be supported by well-designed pedagogical practices.

The qualitative findings further reinforce the importance of professional development. Teachers consistently highlighted the need for training programs that focus on digital pedagogy, instructional design, and classroom management in technology-rich environments. Without such support, teachers may continue to use technology in limited or ineffective ways, thereby restricting its potential benefits. Additionally, institutional factors such as infrastructure, access to devices, and administrative support play a crucial role in shaping teachers' ability to integrate technology. Inadequate resources and lack of policy guidance can hinder even highly motivated teachers from implementing innovative practices. Therefore, a holistic approach that combines teacher development with institutional support is necessary to ensure successful technology integration.

In summary, this study confirms that teachers' digital literacy is a key determinant of effective technology-enhanced English language learning. While significant progress has been made in developing basic digital skills, greater emphasis must be placed on pedagogical integration, continuous professional development, and systemic support. Addressing these factors will be essential in maximizing the potential of technology to improve English language education in the digital era.

IV. CONCLUSION

This study examined the role of teachers' digital literacy in influencing the effectiveness of technology-enhanced English language learning (TEELL). The findings indicate that teachers generally demonstrate a moderate to high level of digital literacy, particularly in terms of technical skills and information evaluation. However, their competencies in digital content creation and pedagogical integration remain comparatively underdeveloped. This imbalance suggests that

while teachers are capable of operating digital tools, they often face challenges in leveraging these tools to design meaningful and effective language learning experiences. The statistical analysis revealed a strong positive relationship between teachers' digital literacy and the effectiveness of TEELL. This finding confirms that digital literacy is not merely a supplementary skill but a fundamental component of effective teaching in the digital era. Teachers with higher levels of digital literacy tend to create more interactive, student-centered learning environments, which positively influence students' motivation, participation, and, to some extent, communicative competence.

Nevertheless, the study also highlights several persistent challenges. These include limited professional training in digital pedagogy, inadequate institutional support, and disparities in access to technological resources. Furthermore, the qualitative findings suggest that many teachers still struggle to move beyond basic technology use toward more transformative pedagogical practices. Therefore, improving digital literacy must go hand in hand with strengthening teachers' pedagogical competence in technology integration. In conclusion, teachers' digital literacy plays a pivotal role in determining the success of technology-enhanced English language learning. Without sufficient digital competence and pedagogical understanding, the potential of technology to improve language education cannot be fully realized.

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