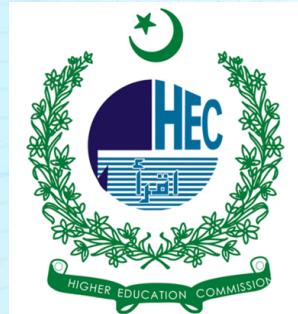


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Exploring the Role of Peer Assessment and Digital Literacy as Tactics to Improve Reading Proficiency among ESL Students



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Abstract

In the 21st century, digital literacy is a vital skill for university students, yet many Pakistani ESL learners still face difficulties using online learning tools effectively, which affects their reading proficiency and engagement. This study investigates the impact of peer assessment-based digital literacy on the reading competency and engagement of ESL students in Pakistani universities. Using a quasi-experimental design, two groups of students were selected through cluster random sampling, with 30 participants in the experimental group and 30 in the control group. Data were collected through post-tests and a questionnaire, and analyzed using One-way ANOVA and MANOVA in SPSS 26.0. The results revealed that peer assessment-based digital literacy significantly improved both reading proficiency and engagement among ESL students. The combined effect suggests that integrating digital literacy with peer assessment enhances reading outcomes and active learning. The study emphasizes the importance of incorporating such strategies in higher education and recommends further research on learner motivation and institutional support.

Keywords: Peer Assessment, Digital Literacy, Reading Proficiency, ESL Learners

Introduction

In the 21st century, acquiring essential skills to meet the demands of the global workforce has become a fundamental goal of education. Many countries have therefore incorporated foreign language learning into their curricula to enhance communication and competitiveness (Chen, 2018). Among language skills, reading is widely recognized as one of the most critical for academic success (Zaman, Chandio, & Noor, 2025). Effective reading contributes to comprehension, knowledge acquisition, and overall learning performance (Akande & Oyedapo, 2018; Kirschmann et al., 2021; Perfetti, 2007).

In the digital age, reading proficiency is closely linked to learners' ability to use information and communication technologies effectively (Ningsih, 2016; Suwannee & Siripan, 2021). In many educational contexts, including Pakistan, university students often demonstrate limited reading competence and insufficient use of digital learning resources. This calls for innovative teaching strategies that promote both reading development and active student involvement. One promising approach is peer assessment, a student-centered practice that encourages learners to evaluate each other's work, provide feedback, and ESL on their own learning (Zaman, Jawad, & Buriro, 2025).

Peer assessment not only serves as an alternative evaluation method but also fosters critical thinking, self-regulation, and decision-making skills (Bozkurt, 2020; Meletiadou, 2021). Previous studies have demonstrated its effectiveness in improving writing, speaking, and academic performance (Chien et al., 2020; Li et al., 2020; Ng et al., 2020). However, limited research has focused on its role in developing reading proficiency and enhancing student engagement—two key indicators of academic success (Fredricks et al., 2016). Engagement encompasses students' cognitive, emotional, and behavioral investment in learning (Fredricks et al., 2004; Furlong & Rebelez-Ernst, 2014) and is influenced by instructional practices and classroom

dynamics (Kahu, 2013; Bedenlier et al., 2020).

In modern higher education, digital literacy has emerged as a crucial competency. It goes beyond technical ICT skills to include critical thinking, creativity, communication, and collaboration (Leaning, 2019; Lukitasari et al., 2022). For Pakistani ESL students, digital literacy can enhance learning autonomy, promote active engagement, and strengthen reading skills necessary for academic and professional success (Laeli et al., 2020; McDougall et al., 2018). Despite this importance, many learners still face challenges in effectively using digital tools and platforms (Akhyar et al., 2021; Nabhan, 2021).

Given the growing integration of technology in education, it is essential to explore how peer assessment-based digital literacy can improve reading proficiency and engagement among ESL learners at Pakistani universities. This study, therefore, aims to investigate the effects of combining peer assessment and digital literacy strategies on university students' reading competence and engagement, contributing to a more effective and interactive ESL learning environment.

Problem Statement

In the 21st century, university students are expected to possess advanced literacy and digital skills to meet academic and professional demands. However, in Pakistan, many ESL students continue to face difficulties in reading comprehension, critical analysis, and active participation in classroom learning. Despite the growing availability of digital resources and online learning tools, a considerable number of students struggle to effectively utilize them to support their reading and language development. This lack of digital literacy often results in low reading proficiency and limited engagement in English language learning activities.

Traditional teacher-centered instructional methods commonly practiced in Pakistani universities provide limited opportunities for student collaboration, self-evaluation, and feedback. Consequently, students remain passive recipients of knowledge rather than active participants in the learning process. While peer assessment has been recognized internationally as an effective learner-centered strategy to enhance autonomy, motivation, and critical thinking, its integration with digital literacy remains underexplored in the Pakistani ESL context.

Therefore, there is a pressing need to investigate how peer assessment-based digital literacy can enhance ESL students' reading proficiency and engagement at the university level in Pakistan. Addressing this gap will contribute to the improvement of English language teaching practices and promote student-centered learning approaches in higher education.

Research Objectives

This study aims to explore the impact of peer assessment-based digital literacy on reading proficiency and student engagement among ESL learners at Pakistani universities. Specifically, it seeks to:

Examine the effect of peer assessment-based digital literacy on the **reading proficiency** of ESL students in Pakistani universities.

Determine the impact of peer assessment-based digital literacy on **student engagement** in ESL classrooms.

Investigate whether there is a **combined effect** of peer assessment-based digital literacy on both reading proficiency and engagement.

Recommend effective strategies for integrating digital literacy and peer assessment into ESL reading instruction at the university level.

Research Questions

To achieve the above objectives, the study addresses the following research questions: What is the effect of peer assessment-based digital literacy on the reading proficiency of ESL students in Pakistani universities?

How does peer assessment-based digital literacy influence student engagement in ESL learning?

Is there a simultaneous effect of peer assessment-based digital literacy on both reading proficiency and engagement?

What instructional strategies can be recommended to effectively integrate peer assessment and digital literacy into ESL reading pedagogy?

Significance of the Study

This study is significant for several reasons. First, it contributes to the limited body of research on peer assessment and digital literacy in the context of Pakistani ESL education, particularly at the university level. By examining how these two strategies interact to enhance reading proficiency and engagement, the study provides empirical insights that can help educators design more effective, learner-centered English language programs.

Second, the findings will assist teachers in adopting innovative teaching practices that promote collaboration, rESLection, and digital competence—skills essential for 21st-century learners. Third, the study will guide curriculum developers and policymakers in integrating digital literacy and peer assessment into national ESL curricula to improve learning outcomes. Finally, it will benefit students by encouraging active participation, self-evaluation, and motivation to improve their reading and digital skills, thereby preparing them for academic and professional success.

Literature Review

Digital literacy has emerged as an essential skill in higher education, especially in English as a Second Language (ESL) learning environments. It enables students to access, evaluate, and utilize online resources effectively for academic purposes (Ng, 2021). In recent years, peer assessment integrated with digital literacy has gained attention as a learner-centered approach that enhances both cognitive and affective engagement. Through peer feedback, students develop critical thinking and self-regulation, leading to improved comprehension and motivation (Topping, 2018).

Research by Lailiyah (2022) demonstrated that peer assessment-based digital literacy significantly improves reading skills and learner engagement compared to traditional instruction. Similarly, Banaruee, Farsani, and Khatin-Zadeh (2025) emphasized that peer-supported digital platforms encourage interactive learning and enhance reading proficiency among EFL learners. In the Pakistani context, technological integration in ESL instruction remains uneven due to infrastructural limitations and traditional teacher-centered pedagogies (Elyas & Aljabri, 2023). However, digital tools such as Google Classroom, Padlet, and online annotation systems have shown potential to promote collaborative learning and engagement when guided by effective pedagogy (Ali & Zaman, 2024).

Studies have also linked peer assessment to higher motivation and accountability in

reading tasks, as students become active contributors to their learning (Li & Gao, 2022). Moreover, digital literacy fosters autonomy, enabling learners to independently explore and interpret texts (Alam & Rahman, 2023). Despite these advantages, few studies in Pakistan have empirically examined the combined impact of peer assessment and digital literacy on ESL reading outcomes.

Hence, this study aims to bridge that gap by investigating how peer assessment-based digital literacy influences Pakistani university students' reading competency and engagement, contributing to both local pedagogical practices and global discussions on digital learning in ESL education.

Research Methodology

Research Design

This study employed a quasi-experimental design with a post-test-only control group, aimed at examining the impact of peer assessment-based digital literacy on ESL students' reading proficiency and engagement at the university level in Pakistan. Two groups were formed: an experimental group, which was taught through peer assessment integrated with digital literacy, and a control group, which received instruction through traditional literacy-based peer assessment.

In the experimental group, students used digital devices such as smartphones and laptops to access online reading materials, share ideas, and provide peer feedback. In contrast, the control group engaged in similar reading and peer-assessment activities using printed materials, notebooks, and traditional classroom discussions without digital tools. The treatment consisted of five sessions four for instruction and one for post-testing.

Target Population

The target population comprised undergraduate ESL students enrolled in English language courses at selected Pakistani universities. These students represented learners who commonly face challenges in digital literacy and reading comprehension.

Sampling Technique and Sample Size

The study adopted a cluster random sampling technique to select participants. Two intact classes were chosen from the larger pool of ESL learners. One class (30 students) was assigned as the experimental group, while the other class (30 students) served as the control group, making a total sample size of 60 participants.

Data Collection Instruments

Data were collected using two primary instruments:

Post-tests: to measure students' reading proficiency. The post-tests consisted of 20 items, including multiple-choice questions and short-answer tasks, designed to assess comprehension, vocabulary, and analytical reading skills.

Questionnaire: to evaluate students' engagement in the reading process. The questionnaire, adapted from Lam et al. (2014), contained 15 statements measured on a five-point Likert scale, ranging from "strongly disagree" to "strongly agree."

Procedure

Both groups were taught the same reading topics, such as creating dialogues and responding to written texts. In the experimental group, students used digital platforms to search for reading materials and collaboratively evaluate peers' work. In the control group, learners followed conventional paper-based activities. After completing the instructional sessions, all participants took a post-test and completed the engagement questionnaire.

Data Analysis

The collected data were analyzed using both descriptive and inferential statistics. Descriptive statistics (mean and standard deviation) were used to summarize the reading and engagement scores. Before applying inferential tests, preliminary analyses were conducted to ensure data normality and homogeneity.

Inferential analyses were conducted using SPSS version 26.0. A One-Way ANOVA was used to determine the effect of peer assessment-based digital literacy on reading proficiency and engagement, while MANOVA was applied to assess the combined effect of these variables. Additionally, the effect size was calculated to measure the strength of the treatment's impact.

Results and Discussion**Descriptive Analysis**

The descriptive statistics for the post-test and engagement questionnaire are presented in **Table 1**.

Table 1

Descriptive Statistics for Reading Competency and Engagement Scores (N = 30 per group)

Variable	Group	Mean	Median	Std. Deviation
Reading Competency	Experimental	82.07	83.00	10.20
	Control	74.80	75.00	17.31
Student Engagement (Survey)	Experimental	62.57	63.00	35.97
	Control	57.93	59.00	35.90

As shown in Table 1, ESL learners in the experimental group, who were taught through peer assessment integrated with digital literacy tools, achieved higher mean scores in both reading competency ($M = 82.07$) and engagement ($M = 62.57$) compared to the control group ($M = 74.80$ and $M = 57.93$, respectively). This suggests that incorporating digital peer-assessment activities significantly enhanced students' reading performance and classroom engagement at the university level in Pakistan.

Preliminary tests for normality (Shapiro-Wilk) indicated that the data were normally distributed ($p > .05$). Likewise, Levene's Test of Homogeneity confirmed equal variances across groups ($p > .05$). Hence, inferential statistical analyses were appropriate.

Inferential Analysis**One-way ANOVA for Reading Competency****Table 2**

Results of One-way ANOVA for Reading Competency

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	792.07	1	792.07	10.06	.002
Within Groups	4568.67	58	78.77		
Total	5360.73	59			

The p-value (.002) is less than .05, indicating a significant difference between the two groups. Thus, peer assessment based on digital literacy significantly improved ESL students' reading proficiency. The effect size, calculated as $\eta^2 = .148$, indicates a large effect (Cohen, 1988; Lakens, 2013), meaning that digital peer-assessment strategies contributed meaningfully to students' reading outcomes.

One-way ANOVA for Student Engagement**Table 3**

Results of One-way ANOVA for Student Engagement

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	322.02	1	322.02	9.91	.003
Within Groups	1885.23	58	32.50		
Total	2207.25	59			

The significance level (.003) is less than .05, showing that digital peer assessment also had a significant positive effect on student engagement. The $\eta^2 = .146$ represents a large effect size, confirming that students exposed to technology-supported peer assessment were more motivated and actively involved in classroom discussions than those in traditional settings.

MANOVA Results for Reading Competency and Engagement**Table 4**

Results of MANOVA for Combined Dependent Variables (Reading and Engagement)

Effect	Value	F	Hypothesis df	Error df	Sig.	Partial η^2
Intercept	0.994	552.74	2.00	57.00	.000	.994
Class (Group)	0.218	7.94	2.00	57.00	.001	.218

As shown in Table 4, the MANOVA results yielded a significant multivariate effect (Wilks' $\Lambda = .782$, $F = 7.94$, $p = .001$), indicating that the peer-assessment-based digital literacy intervention simultaneously improved both reading competency and engagement. The partial eta squared value (.218) again reflects a large effect, supporting the conclusion that digital peer assessment significantly enhances both academic and affective learning outcomes among Pakistani ESL learners.

Discussion

The impact of peer-assessment-based digital literacy on ESL students' reading competency was analyzed through a series of post-tests. Preliminary tests, including normality and homogeneity, were conducted using SPSS version 26.0 before performing inferential analyses. The One-way ANOVA revealed a significant difference between the experimental and control groups ($p = .002 < .05$), with a large effect size ($\eta^2 = .148$). This finding indicates that students exposed to peer-assessment-based digital literacy outperformed those using traditional peer-assessment techniques.

These results align with prior studies suggesting that online and technology-supported peer assessment enhances reading proficiency (Ng et al., 2020). The integration of digital tools enables learners to explore information creatively, evaluate their peers' performance, and develop critical reading strategies. As noted by Schröter and Bar-Kochva (2019), reading competence is vital for academic success and lifelong learning. Thus, digital peer-assessment strategies provide meaningful opportunities for learners to build comprehension, analytical, and evaluative skills (Rahmawati et al., 2014).

In contrast with earlier findings that emphasized the role of peer assessment in improving writing (Babai & Adeh, 2019; Meletiadou, 2021) and speaking (Double et al., 2020), the current study extends its significance to reading comprehension. By using smartphones and online platforms, students accessed relevant materials, collaborated, and provided constructive feedback, thereby improving both reading performance and social interaction.

Regarding student engagement, the One-way ANOVA indicated a significant influence of digital peer assessment ($p = .003 < .05$) with a large effect size ($\eta^2 = .146$). Students in the experimental group showed greater engagement than those in the control group. Similar findings were reported by Chiu (2021) and Teng and Wang (2021), who highlighted that technological integration enhances participation and motivation. Digital literacy encourages learners to search, evaluate, and share information collaboratively, which promotes sustained engagement (Bond & Bedenlier, 2019). Furthermore, students' ability to adapt to evolving digital environments was found to enhance engagement (Zhang et al., 2021).

Psychosocial factors, such as positive relationships among peers and teachers, also contribute to classroom engagement (Farrell & Brunton, 2020). The collaborative nature of peer assessment fosters a supportive learning environment, allowing learners to engage actively and overcome academic challenges through cooperation and mutual feedback.

The MANOVA results further confirmed a simultaneous and significant impact of digital peer assessment on both reading competency and engagement ($p < .05$, $\eta^2 = .218$), representing a large effect size. This outcome supports the assertion that students with higher English proficiency are more adept at applying digital literacy skills in academic contexts (Alsmari, 2021). The finding also concurs with earlier research emphasizing that digital literacy improves learning outcomes and motivation (Akhyar et al., 2021; Lin et al., 2017; Lukitasari et al., 2022).

Integrating digital literacy with peer assessment promotes critical thinking, information processing, and active participation. It encourages learners to evaluate online content critically while engaging in meaningful discussions. As Handayani (2018) and McGuinness and Fulton (2019) observed, digital literacy has transformed

the focus of learning from individual expression to collaborative knowledge construction. Consequently, the use of peer-assessment-based digital literacy in ESL classrooms not only strengthens reading competence but also enhances student engagement, rESLection, and critical evaluation—core skills for 21st-century learners (Padmadewi et al., 2022).

Conclusion

The study found that peer assessment-based digital literacy significantly improved ESL students' reading competency and engagement at the university level in Pakistan. Integrating digital tools with peer assessment created an interactive and collaborative learning environment that enhanced comprehension and participation. The results showed a strong positive effect and large effect sizes for both reading achievement and engagement. This suggests that combining digital literacy with peer assessment is an effective approach for promoting active, student-centered learning in ESL classrooms. Future research should explore its impact on learners' motivation, parental involvement, and contextual challenges in implementing digital-based peer learning across diverse educational settings.

Recommendations

Based on the findings, it is recommended that Pakistani universities integrate peer assessment-based digital literacy strategies into ESL reading courses to enhance student engagement and comprehension. Teachers should be trained to effectively use digital platforms that support collaborative assessment and feedback. Curriculum developers may incorporate digital literacy modules aligned with communicative and student-centered approaches. Institutions should also provide technological support and resources to ensure equitable access for all learners. Future studies could examine the long-term impact of digital peer assessment on students' motivation, writing performance, and independent learning, as well as challenges in low-resource academic environments.

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