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THE ROLE OF INTERACTIVE DIGITAL TOOLS IN ENHANCING STUDENTS' ENGAGEMENT AND ACHIEVEMENT IN ENGLISH LANGUAGE CLASSROOMS

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Abstract
The purpose of this study is to find out how interactive digital tools can enhance students' academic achievement and engagement in secondary school English language classrooms in District Gujrat, Punjab, Pakistan. The research employs a mixed-methods research design and uses quantitative and qualitative data collection methods to provide a holistic view of the impact of digital tools. The study used a standardized Likert-scale questionnaire to collect quantitative data from 250 students randomly selected (using stratified random sampling) from government and private schools and semi-structured interviews with 20 English language teachers (using purposive sampling) to collect qualitative data. The research examines the extent to which interactive digital tools impact students' English language learning achievement and their behavioural, emotional and cognitive engagement. The qualitative data were analyzed thematically while the quantitative data were analyzed using descriptive and inferential statistics (t-tests, ANOVA, correlation and multiple regression). In addition to the most effective digital tools, the study also examines teachers' and students' perceptions of their use in the classroom. The findings reveal a relationship between the use of interactive digital tools and increased student engagement and learning outcomes. The study highlights the importance of integrating technology into English as second language teaching and learning to establish active and student-focused learning environments. It has implications for teachers, curriculum developers, and policymakers that are interested in improving language learning through digital innovation.

Keywords: *mixed-methods, educational technology, engagement, achievement, English language learning, interactive digital tools.*

Introduction

The integration of interactive digital resources in language classrooms is one of the most significant developments of the rapid technological advancement in the 21st century that has revolutionized teaching and learning globally. These tools have become powerful means of enhancing academic performance and student participation in English language teaching and learning. Platforms such as Kahoot, Quizizz, Duolingo, Google Classroom and Moodle have

shifted the focus from passive content learning to active and engaging experiences that motivate and immerse students in the learning process.

For English language learning, this digital transformation has been highly beneficial. In the past, English language classrooms, especially where English is a second or foreign language, relied heavily on teacher-focused methods such as grammar-translation, memorization and lectures. Although these approaches are still prevalent, interactive digital technologies that encourage collaboration, instant feedback and learner autonomy are increasingly replacing or supporting them. These tools provide contextualized opportunities for practice in speaking, writing, listening and reading, which are often missing in traditional methods. Research shows that interactive digital technologies can enhance engagement in English classrooms. Gamified applications such as Kahoot and Quizizz increase student motivation and interest by transforming grammar and vocabulary tasks into game-like activities. Similarly, Duolingo's reward-based feedback and progress tracking encourage frequent practice. Moodle and Google Classroom also provide structured learning environments that allow students to learn at their own pace while enabling teachers to monitor progress and respond to learners' needs.

Beyond engagement, interactive digital tools contribute to improved student performance in English language learning. Immediate feedback helps students identify and correct errors quickly, reinforces correct language use and accelerates learning. Their multimodal features, including text, audio, images and interactive tasks, support diverse learning styles and connect classroom learning with real-life communication. The COVID-19 pandemic further highlighted the importance of digital platforms in sustaining English language teaching through online and hybrid learning modes, proving that interactive platforms are no longer optional but necessary for effective learning.

Despite the growing recognition of interactive digital tools, their implementation in English language classrooms in developing countries such as Pakistan remains limited and sporadic. Most English language programs still rely on traditional teacher-centered methods, although some urban schools have started using smart boards, projectors and computer-based language learning software. Pakistan provides an important context for exploring the role of interactive digital tools in English language classrooms because English plays a central role in the education system as a compulsory subject, a medium of instruction in higher education and a measure of academic and professional success. However, English language teaching in Pakistan faces persistent challenges, including large class sizes, inadequate teaching materials, poorly trained teachers and low student motivation. Interactive digital tools such as Kahoot, Quizizz, Duolingo, Moodle and Google Classroom have the potential to create more engaging, personalized and goal-oriented English classrooms.

Nevertheless, the use of these tools remains limited due to infrastructural barriers such as unreliable internet access, lack of devices and insufficient digital skills among teachers. Even where resources are available, teachers often use technology only for presentations rather than interactive, student-centered learning. There is also a significant gap in empirical literature regarding the influence of interactive digital tools on engagement and learning outcomes in Pakistan. Since English proficiency strongly influences students' academic progress and career opportunities in Pakistan, this research gap is highly significant. Therefore, this research aims to investigate the impact of interactive digital tools on student engagement and achievement in English language classes. The findings of this study will contribute to the growing literature on

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educational technology and provide context-specific evidence for educators, curriculum planners and policymakers seeking to improve English language teaching in Pakistan.

Research Objectives

The purpose of this study is to determine how interactive digital technologies affect student academic performance and engagement in English language classes. The study uses the following specific objectives to achieve this goal:

1. To determine the influence of using interactive digital tools on student engagement in English language classes.
2. To examine the impact of interactive digital technologies on students' English language learning.
3. To examine the perceptions of teachers and students of the role of interactive digital technologies in enhancing English language learning

Research Questions

This study seeks to address the following questions in line with the above objectives:

1. What can interactive digital technologies do to increase student engagement in English language classrooms?
2. To what extent do interactive digital technologies improve learning of the English language?
3. In English language classrooms, which interactive digital tools are believed to be key to promoting student participation and learning?
4. What are teachers' and students' attitudes to the use of interactive digital technologies in English language classes?

Literature Review

Overview of Interactive Digital Tools in English Language Education

The rise of interactive digital technologies in English language programs has been a key trend in language education. Over the past two decades, English language teaching has evolved from passive, teacher-centered approaches to interactive classrooms where digital tools play a central role in student engagement. The emergence of Computer-Assisted Language Learning (CALL) and internet-based learning platforms introduced more interactive and learner-centered approaches to English language teaching.

Recent interactive digital technologies support real-time interaction, immediate feedback, collaboration and learner autonomy. Warschauer and Kern (2000) highlight that technology-enhanced language learning develops communication and collaboration skills, while Beatty (2010) emphasizes that digital technologies provide personalized learning experiences. The COVID-19 pandemic further accelerated the use of interactive digital tools in English language classrooms worldwide. Platforms such as Zoom, Google Classroom and Moodle became essential for continuing English language instruction during online and hybrid learning. However, the use of interactive digital technologies in Pakistan remains limited because of insufficient infrastructure and lack of teacher training.

Interactive Digital Tools in English Language Classrooms

Interactive digital resources are the operational focus of this study because they promote learning outcomes and classroom engagement beyond traditional teaching methods. These resources support reading, writing, speaking and listening skills. Kahoot is a game-based learning platform that transforms grammar and vocabulary tasks into interactive activities. Wang (2015) argues that

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Kahoot significantly increases students' motivation and engagement through immediate feedback. Cai et al. (2025) and Han (2025) further confirm that game-based digital learning creates engaging learning experiences.

Zoom became one of the most widely used systems for synchronous English language learning during the COVID-19 pandemic. Trust and Whalen (2020) found that Zoom provided meaningful opportunities for interaction. Al-Maroof et al. (2020) report that Google Classroom increases learner autonomy and student accountability, while Barbieri (2025) emphasizes its importance in maintaining engagement. Vesselinov and Grego (2012), Li et al. (2025) and Hamid and Barzenji (2024) also show that Duolingo improves vocabulary learning and student retention. Costello (2014) argues that Moodle supports blended learning and self-directed engagement.

Student Engagement and Interactive Digital Tools in English Language Learning

Student engagement is a major factor in language learning success. Fredricks, Blumenfeld and Paris (2004) identify cognitive, behavioural and emotional engagement as major dimensions of engagement. Digital tools such as Duolingo support cognitive engagement through adaptive learning activities, while Google Classroom and Moodle enhance behavioural engagement through collaborative learning. Gamified tools such as Kahoot and Quizizz create enjoyable learning experiences. Henrie et al. (2015), Haerawan et al. (2024) and Moskovich and Hershkovitz (2024) confirm that interactive digital technologies significantly increase student engagement.

Interactive Digital Tools and Academic Achievement in English Language Learning

Research consistently shows that interactive digital technologies improve academic achievement in English language learning. Chenoweth and Murray (2003) found that students in hybrid English language courses performed as well as or better than students in traditional classrooms because of flexibility and immediate feedback. Hung (2017) demonstrated that mobile-assisted language learning improved vocabulary and grammar achievement, while Vesselinov and Grego (2012) reported that Duolingo produced learning outcomes equivalent to a semester of university English classes. Khan et al. (2020) found that students using Moodle and YouTube achieved higher scores in vocabulary and reading comprehension. Sailer et al. (2024) and Zhao et al. (2025) confirm that technology-enhanced learning positively affects academic achievement, although Heemskerk et al. (2005) stress careful pedagogical integration.

Teachers' and Learners' Perceptions of Interactive Digital Tools

Teachers' and learners' perceptions strongly influence the success of interactive digital technologies in English language classrooms. Ertmer (2005) identifies barriers such as lack of training and technology access. Al-Senaidi et al. (2009) and Bashir and Khurshid (2020) found that teachers had positive attitudes toward digital technologies but faced challenges related to institutional support and technical skills. Mishra and Koehler's (2006) TPACK framework emphasizes technical and pedagogical knowledge for effective integration. Liaw (2002) and Mahmood and Bokhari (2021) report that students valued digital tools for flexible and communicative learning. Shen et al. (2024) emphasize the importance of teacher support and online facilitation

Research Gap and Theoretical Framework

Although literature on interactive digital tools in English language learning is extensive, limited localized empirical research exists in Pakistani English language classrooms. Many studies focus mainly on achievement outcomes and give limited attention to behavioural, emotional and cognitive engagement. This study is guided by Constructivist Theory by Piaget (1952) and

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Vygotsky (1978), the Technology Acceptance Model (Davis, 1989), Self-Determination Theory by Deci and Ryan (1985), Fredricks, Blumenfeld and Paris (2004) and Mayer's (2001) Cognitive Theory of Multimedia Learning. Overall, literature supports the role of interactive digital technologies in enhancing engagement and academic achievement in English language learning.

Research Design

The present research utilized a mixed-methods research design, which merged quantitative and qualitative approaches to provide an in-depth understanding of the research topic. The mixed-methods approach was selected because it allowed triangulation of findings, increased validity and reliability, and enabled the researcher to examine both measurable outcomes and the experiences of participants (Creswell and Plano Clark, 2018).

The quantitative component consisted of a standardized survey questionnaire that measured student engagement, perceptions of interactive digital technologies and academic achievement. The qualitative component included semi-structured interviews with selected English language teachers to explore classroom practices and attitudes toward the use of digital tools.

A descriptive-correlational design was used in the quantitative strand to examine the relationship between the use of interactive digital tools and student engagement and academic achievement.

Population and Sample

The target population consisted of secondary school students (Grades 9 and 10) and English language teachers from public and private schools in Gujrat District, Punjab, Pakistan. A stratified random sampling technique was used for selecting students by school type and gender to ensure representation of different demographics and school types. For the qualitative section, purposive sampling was used to select teachers with at least two years of experience in using digital tools in classrooms. The sample consisted of 250 secondary school students from ten schools, including five government and five private schools. In addition, twenty English language teachers participated in the interviews. Krejcie and Morgan (1970).

Table 1: Sample Distribution by School Type and Gender

School Type	Boys' Schools	Girls' Schools	Total Schools	Students
Government	3	2	5	125
Private	2	3	5	125
Total	5	5	10	250

Research Instruments

The primary quantitative data collection instrument was a structured Likert-type questionnaire based on validated measures used in previous studies (Fredricks et al., 2004; Davis, 1989). The questionnaire included demographic information, behavioural, emotional and cognitive engagement, academic achievement perceptions and perceptions of interactive digital tools. A five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used. The semi-structured interview guide consisted of ten open-ended questions exploring teachers' perceptions and practices regarding digital tools. The questionnaire was pilot-tested on thirty students, and reliability was measured using Cronbach's Alpha coefficient (Tavakol and Dennick, 2011).

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Table 2: Reliability Coefficients for Questionnaire Subscales

Subscale	No. of Items	Cronbach's Alpha
Student Engagement	15	0.87
Academic Achievement Perceptions	12	0.83
Attitudes toward Digital Tools	13	0.89
Overall Instrument	40	0.91

All the items have a Cronbach Alpha value that exceeds the 0.70 level proposed by Nunnally (1978) that justifies the use of the instrument in the main study.

Instrument Validity, Data Collection Procedure and Data Analysis

Content validity was established through expert review by specialists in educational psychology, educational technology and English language teaching to ensure that the questionnaire accurately measured the intended constructs. Construct validity was examined during pilot testing through exploratory factor analysis (EFA), where all retained items achieved factor loadings above 0.40.

Data collection was conducted over eight weeks. Questionnaires were distributed during regular classroom sessions after obtaining permission from school authorities, and participation was voluntary. Teacher interviews were conducted at convenient times, audio-recorded with consent and transcribed within 48 hours.

Quantitative data were analyzed using IBM SPSS Statistics (Version 26). Descriptive statistics, independent samples t-test, one-way ANOVA, Pearson Correlation Analysis and Multiple Regression Analysis were used. Qualitative interview data were analyzed using Braun and Clarke's (2006) six-step thematic analysis framework, and member checking ensured credibility and accuracy of findings.

Data Analysis and Interpretation

Profile of Respondents

Student Sample

There were 250 students in all. There were 125 males (50%) and 125 females (50%) in the sample. Students from Grades 9 (n = 128; 51.2%) and 10 (n = 122; 48.8%) were selected. The school type was equally divided with 50% (n = 125) in government schools and 50% (n = 125) in private schools.

Table 3: Demographic Profile of Student Respondents (N=250)

Variable	Category	Frequency (%)
Gender	Male	125 (50.0%)
	Female	125 (50.0%)
Grade	Grade 9	128 (51.2%)
	Grade 10	122 (48.8%)

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Variable	Category	Frequency (%)
School Type	Government	125 (50.0%)
	Private	125 (50.0%)

Research Question 1: Role of Interactive Digital Tools in Student Engagement

The first research question examined the role of interactive digital technologies in increasing student engagement in English language classrooms. Descriptive statistics showed a high level of overall student engagement (M = 4.25, SD = 0.60). Emotional engagement recorded the highest mean score (M = 4.35), indicating that digital tools effectively generated interest and positive attitudes toward learning English. Cognitive engagement also showed a high level (M = 4.18), reflecting meaningful intellectual involvement in digital learning activities.

Table 4: *Descriptive Statistics for Student Engagement Subscale*

Engagement Dimension	N	Mean	SD
Behavioral Engagement	250	4.21	0.62
Emotional Engagement	250	4.35	0.58
Cognitive Engagement	250	4.18	0.67
Overall Engagement	250	4.25	0.60

Descriptive Statistics for Student Engagement Subscale

An independent samples t-test showed a statistically significant gender difference in engagement between male students (M = 4.19, SD = 0.64) and female students (M = 4.31, SD = 0.56), t(248) = -1.98, p = .048. Female students reported slightly higher engagement levels.

ANOVA results also revealed significant differences between government and private schools, F(1, 248) = 7.43, p = .007. Students in private schools (M = 4.38, SD = 0.55) demonstrated higher engagement than students in government schools (M = 4.12, SD = 0.63), possibly due to better digital infrastructure in private institutions.

Research Question 2: Effects of Digital Tools on Academic Achievement

The second research question explored the effect of interactive digital technologies on students' academic achievement. Students reported the highest achievement gains in listening and speaking skills (M = 4.33), followed by vocabulary development (M = 4.28). Writing skills showed the lowest mean score (M = 4.05), although still above the midpoint of the scale. Overall academic achievement perceptions were high (M = 4.21, SD = 0.63).

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Table 5: Descriptive Statistics for Academic Achievement Perceptions

Achievement Indicator	N	Mean	SD
Vocabulary Development	250	4.28	0.61
Reading Comprehension	250	4.19	0.65
Writing Skills	250	4.05	0.72
Listening and Speaking	250	4.33	0.59
Overall Achievement	250	4.21	0.63

Pearson correlation analysis showed a strong positive relationship between the use of interactive digital tools and academic achievement perceptions ($r(248) = .68$, $p < .001$). Significant positive relationships were also found between digital tool use and student engagement ($r(248) = .73$, $p < .001$), and between engagement and academic achievement ($r(248) = .64$, $p < .001$). These findings indicate that engagement acts as a mediator between digital tool use and academic achievement.

Research Question 3: Best Interactive Digital Tools

The third research question identified the most effective interactive digital tools for promoting engagement and achievement in English language learning. Kahoot! received the highest effectiveness rating (M = 4.48), followed by YouTube educational videos (M = 4.39). Google Classroom and Quizlet were also highly rated for organization and vocabulary learning. Interactive whiteboards received the lowest rating, possibly because of limited resources in some schools.

Table 6: Student Ratings of Interactive Digital Tool Effectiveness

Digital Tool	Mean	SD	Rank	N
Kahoot! (Gamification)	4.48	0.55	1st	250
YouTube Educational Videos	4.39	0.59	2nd	250
Google Classroom	4.27	0.63	3rd	250
Quizlet (Flashcards)	4.22	0.67	4th	250
Padlet (Collaborative Board)	4.15	0.71	5th	250
Duolingo	4.08	0.74	6th	250
Interactive Whiteboard	3.97	0.79	7th	250

Research Question 4: Staff and Student Attitudes

Students showed highly positive attitudes toward interactive digital technologies, with an overall mean score of 4.30 (SD = 0.57). Most students agreed that digital tools made English classes more interesting and understandable. Teacher interviews revealed increased student motivation and engagement after integrating technologies such as Kahoot! Teachers also believed digital tools improved language skill development. However, teachers identified challenges including

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unreliable internet access, lack of resources and limited institutional support, and emphasized continuous teacher training for effective technology integration

Summary, Findings, Discussion and Conclusion

The present study examined the role of interactive digital technologies in improving students' achievement and learning in English classes through a mixed-methods approach involving questionnaires and interviews in secondary schools of Gujrat District, Punjab, Pakistan. The study was guided by the Technology Acceptance Model (Davis, 1989) and Self-Determination Theory (Deci & Ryan, 1985). Quantitative data were analyzed using descriptive statistics, t-test, ANOVA, correlation and regression analysis, while qualitative data were analyzed through Braun and Clarke's (2006) thematic analysis framework.

The findings revealed that interactive digital technologies significantly improved student engagement and academic achievement. Emotional engagement showed the highest improvement, while speaking, listening and vocabulary skills improved most through digital learning. Kahoot!, YouTube videos, Google Classroom and Quizlet were identified as the most effective tools. The findings support Fredricks et al. (2004), Mayer (2001) and Dicheva et al. (2015). Teachers highlighted challenges related to internet connectivity, infrastructure and lack of training. Overall, the study concludes that interactive digital tools positively influence behavioural, emotional and cognitive engagement and improve English language learning outcomes.

Study Limitations

The study has several limitations. First, the research was conducted only in Gujrat District and may not represent other geographical or socioeconomic contexts in Pakistan. Second, the study used a cross-sectional design and therefore could not establish causal relationships between digital tool use, engagement and achievement. Third, academic achievement was measured through students' perceptions rather than objective examination scores. Fourth, the findings may not be generalized to primary or higher education because the study focused only on secondary schools. Finally, the qualitative sample of twenty teachers may not fully represent the experiences of all English language teachers.

Recommendations

The study recommends that teachers integrate game-based platforms such as Kahoot! and Quizlet to make English learning more engaging and interactive. Multimedia resources such as YouTube videos should also support different learning styles and authentic language exposure. School administrators should invest in digital infrastructure, internet access and digital devices, particularly in government schools. Policymakers should ensure ongoing professional development programs focusing on digital literacy and technology-integrated teaching. Future research should conduct longitudinal studies to examine relationships between digital technology use and student achievement and investigate how different digital tools influence language skills and teacher digital literacy in Pakistan.

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