

ENHANCING STUDENTS' ENGLISH PROFICIENCY THROUGH TECHNOLOGY-BASED LEARNING IN ELT

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Abstract

This research explores how technology-driven learning methods can boost students' English skills, with a particular focus on vocabulary acquisition and speaking proficiency in English Language Teaching (ELT). As digital technologies continue to evolve, their impact on education becomes more pronounced, pushing educators to blend interactive tools into their teaching routines. The study utilized a quasi-experimental model, engaging 60 undergraduate participants separated into experimental and control groups. The experimental group engaged with platforms like Duolingo, Quizlet, and YouTube, whereas the control group received conventional face-to-face instruction.

Vocabulary assessments, speaking evaluations, classroom observations, and questionnaires served as the primary data collection instruments. Results indicated that students utilizing digital tools attained notably higher scores than their peers taught by traditional means. Furthermore, participants expressed favorable attitudes toward the inclusion of technology, citing improvements in motivation, engagement, and the adaptability of their learning experiences.

These findings are in line with constructivist learning theory, which highlights the importance of active participation and meaningful learning. The outcomes suggest that incorporating technology into lessons can foster more dynamic classroom environments and facilitate better language development. Educators are advised to blend digital resources with effective teaching strategies for optimal results.

Keywords: digital learning, English language teaching, technology integration, speaking skill, vocabulary mastery

Introduction

Advances in digital technology have transformed many facets of modern life, education being a prominent example. Schools and universities now more frequently weave technology into their instructional methods to foster engaging and effective learning spaces. Within English Language Teaching (ELT), technology now plays a pivotal role in helping learners strengthen their language abilities through varied and interactive experiences. As smartphones, laptops, and internet-based tools become increasingly available, educators are more inclined to integrate digital media into their daily teaching practices.

Modern learners are accustomed to digital apps and online communications, making

the use of technology in ELT especially relevant. Traditional approaches that focus primarily on textbooks and lectures may fail to sustain students' interest or encourage active participation. Many students report feeling disengaged, unmotivated, and lacking opportunities to practice English in meaningful ways, which can hinder their vocabulary growth and speaking proficiency—two vital language skills.

Mastering vocabulary is fundamental for language learners, as it enables them to share ideas, comprehend messages, and communicate efficiently. Despite this, a significant number of students find it difficult to remember new words, often due to a lack of engaging practice and repetitive instructional methods. Speaking, likewise, poses substantial challenges, with learners

commonly facing anxiety, self-doubt, and pronunciation issues, particularly when required to use English publicly. Frequently, classroom tasks do not offer sufficient chances for students to practice speaking in realistic settings.

Utilizing technology in education presents solutions to many of these obstacles. Tools like Duolingo, Quizlet, and YouTube introduce interactive, enjoyable, and adaptable activities that make English practice more appealing. Such platforms foster learner autonomy by granting students unrestricted access to materials at their convenience. Features like audio, video, gamification, and real-time feedback can boost student engagement and motivation. Exposure to authentic language through digital channels also supports improvements in pronunciation, listening skills, and overall communication.

Research has consistently demonstrated that incorporating technology into language instruction leads to better outcomes, including higher vocabulary retention, increased learner motivation, and greater classroom involvement. Mobile learning, online platforms, and multimedia tools are all associated with these improvements. In addition, technology-based teaching encourages student-centered learning, where students take an active role in building knowledge and enhancing communication skills. Despite these benefits, there are still obstacles to effective technology integration, especially in less-resourced educational environments. Some instructors may lack the necessary digital skills, and certain schools might not have adequate technological infrastructure or access. Additionally, few investigations have explored the simultaneous impact of technology-based learning on both vocabulary and speaking skills among university-level students.

Given these considerations, this investigation examines how technology-based instruction enhances students' English proficiency, with a specific emphasis on vocabulary development and speaking skills. The research spotlights the application of digital platforms like Duolingo, Quizlet, and YouTube in English classes, while also gathering insights into students' views on using technology during language learning activities.

This study seeks to answer the following research questions:

1. Does technology-based learning significantly improve students' vocabulary mastery?
2. Does technology-based learning enhance students' speaking ability?
3. How do students perceive the use of digital learning platforms in English learning activities?

Based on these research questions, the objectives of this study are:

1. To examine the effectiveness of technology-based learning in improving vocabulary mastery.
2. To analyze the impact of digital learning tools on students' speaking ability.
3. To identify students' perceptions toward technology integration in ELT classrooms.

The findings of this study are expected to contribute both theoretically and practically. Theoretically, this research may enrich discussions related to technology integration and digital learning in ELT. Practically, the study may provide useful insights for teachers, educational institutions, and curriculum developers in designing more

interactive and student-centered English learning environments. In addition, the results may encourage educators to integrate digital media strategically in order to improve students' language proficiency and learning motivation.

Methodology

This study employed a quasi-experimental research design to investigate the effectiveness of technology-based learning in improving students' English proficiency, particularly vocabulary mastery and speaking ability. Quasi-experimental research is commonly used in educational studies because it allows researchers to examine the effectiveness of instructional treatments in natural classroom settings (Ellis, 2008). The research used a pre-test and post-test control group design in order to compare the learning outcomes between students who learned through digital learning platforms and those who learned through conventional teaching methods. This design was selected because it allowed the researcher to measure students' improvement before and after the treatment while maintaining natural classroom conditions.

The research was conducted at the English Education Department of Semarang State University during the academic year 2025/2026. The participants of this study consisted of 60 undergraduate students who were enrolled in an English course. The participants were divided into two groups: an experimental group and a control group. Each group consisted of 30 students with relatively similar levels of English proficiency based on their previous academic performance and placement results. The participants were selected using purposive sampling because the researcher intended to involve students who had similar

learning backgrounds and access to digital devices.

The experimental group received instruction through technology-based learning activities, while the control group learned through conventional classroom methods. Students in the experimental group used several digital learning platforms, including Duolingo, Quizlet, and YouTube, during the treatment period. These platforms were chosen because they provide interactive learning features, multimedia materials, and opportunities for independent learning. Multimedia materials can improve students' comprehension because learners process information more effectively through visual and auditory input (Mayer, 2009). Mobile-assisted learning also increases learning flexibility because students can access educational materials anytime and anywhere (Ally, 2009). Duolingo was used to support vocabulary exercises and sentence construction activities. Quizlet was utilized for vocabulary memorization through digital flashcards and quizzes, while YouTube videos were used to expose students to authentic pronunciation, listening practice, and conversational English expressions. Meanwhile, the control group learned through teacher explanations, textbook exercises, printed worksheets, and classroom discussions, without integrating digital learning platforms.

Several research instruments were used to collect the data in this study. The first instrument was a vocabulary test designed to measure students' vocabulary mastery before and after the treatment. The test consisted of multiple-choice questions, matching exercises, and sentence completion tasks. The second instrument was a speaking assessment rubric used to evaluate students' speaking performance. The rubric assessed several aspects of speaking, including pronunciation, fluency, vocabulary usage, grammar accuracy, and

confidence during oral communication. Speaking assessment should evaluate fluency, pronunciation, grammar, vocabulary use, and communicative effectiveness simultaneously (Harmer, 2007). The third instrument was a questionnaire distributed to students in the experimental group to identify their perceptions of technology-based learning. The questionnaire consisted of close-ended and open-ended questions related to students' motivation, participation, learning flexibility, and overall experiences in using digital learning tools. Classroom observation and questionnaires are important instruments for identifying students' learning experiences and perceptions toward instructional methods (Brown, 2007). In addition, classroom observations were conducted during the learning process to examine students' engagement, interaction, and participation throughout the treatment period.

Before the treatment was implemented, both groups completed a pre-test to identify their initial vocabulary knowledge and speaking ability. The pre-test results were also used to ensure that the experimental and control groups had relatively similar proficiency levels before receiving different instructional treatments. After the pre-test, the treatment was conducted over six weeks with two learning sessions per week. During the treatment period, students in the experimental group actively participated in technology-based learning activities. They completed online vocabulary exercises, practiced pronunciation through video materials, participated in interactive quizzes, and independently reviewed learning materials outside the classroom. The control group, on the other hand, learned using conventional instructional techniques such as note-taking, textbook reading, and teacher-led classroom activities.

At the end of the treatment period, both groups completed a post-test using similar formats and difficulty levels as the pre-test. The post-test aimed to measure students' improvement in vocabulary mastery and speaking ability after participating in different learning approaches. The questionnaire was then distributed to students in the experimental group to gather information about their experiences and perceptions regarding technology integration in English learning activities.

The collected data were analyzed using both quantitative and qualitative approaches. Quantitative data obtained from the vocabulary tests and speaking assessments were analyzed using descriptive statistics and inferential statistics. Mean scores, percentages, and standard deviations were calculated to compare students' performance before and after the treatment. An independent sample t-test was conducted to determine whether there was a statistically significant difference between the experimental group and the control group. The level of significance used in this study was 0.05. Meanwhile, qualitative data obtained from questionnaires and classroom observations were analyzed through data reduction, categorization, and interpretation in order to identify common themes related to students' perceptions, learning motivation, and classroom participation.

To ensure the validity and reliability of the instruments, the vocabulary test and questionnaire were reviewed by English education lecturers before being administered to the participants. The speaking assessment rubric was adapted from commonly used oral proficiency criteria in ELT research. In addition, the researcher conducted a pilot test on several students outside the research participants to examine the clarity and consistency of the instruments.

Overall, the methodology of this study was designed to provide comprehensive data regarding the effectiveness of technology-based learning in English Language Teaching. By combining quantitative and qualitative methods, the research aimed to obtain a deeper understanding of students' language improvement as well as their perceptions toward digital learning integration in the classroom environment.

Findings and Discussions

This section presents the findings of the study related to the effectiveness of technology-based learning in improving students' English proficiency, particularly vocabulary mastery and speaking ability. The findings are organized based on the research questions and supported by quantitative and qualitative data obtained from vocabulary tests, speaking assessments, questionnaires, and classroom observations. The discussion section further interprets the findings by relating them to previous studies and relevant learning theories.

Vocabulary Mastery Improvement

The first objective of this study was to examine whether technology-based learning significantly improves students' vocabulary mastery. To measure students' vocabulary development, both the experimental group and the control group completed pre-tests and post-tests before and after the treatment period.

The results showed that students in the experimental group achieved higher improvement scores compared to students in the control group. Before the treatment, both groups demonstrated relatively similar levels of vocabulary mastery. The mean score of the experimental group in the pre-test was 65.3, while the control group

obtained a mean score of 64.8. These results indicate that both groups started with nearly equal vocabulary proficiency levels.

After six weeks of treatment, the post-test results demonstrated a significant increase in the experimental group's performance. The experimental group achieved a mean score of 85.7, while the control group obtained a mean score of 72.1. This finding indicates that students who learned through technology-based learning platforms showed greater vocabulary improvement compared to those who learned through conventional classroom instruction. The improvement indicates that repeated exposure to vocabulary through digital applications supports long-term vocabulary retention (Nation, 2013).

Table 1. *Vocabulary Test Scores*

Group	Pre-test Mean	Post-test Mean	Improvement
Experimental Group	65.3	85.7	20.4
Control Group	64.8	72.1	7.3

The statistical analysis using an independent sample t-test also revealed a significant difference between the two groups. The independent sample t-test showed a significance value of 0.000 ($p < 0.05$), indicating a statistically significant difference between the two groups. This means that technology-based learning had a statistically significant effect on students' vocabulary mastery.

The findings suggest that digital learning tools such as Quizlet and Duolingo effectively supported vocabulary learning. Interactive mobile applications help learners memorize vocabulary more effectively because they combine repetition, feedback, and learner engagement (Stockwell, 2010). Students in the experimental group were exposed to repeated vocabulary exercises, visual learning materials, and immediate

corrective feedback. These features helped students retain new vocabulary more effectively than traditional memorization techniques. Furthermore, the gamified learning system used in the applications increased students' motivation to complete learning activities consistently.

Classroom observations also revealed that students in the experimental group participated more actively during vocabulary learning sessions. Many students appeared enthusiastic when completing interactive quizzes and vocabulary games. They were also more willing to ask questions and explore unfamiliar words independently through digital applications. In contrast, students in the control group tended to rely heavily on teacher explanations and printed materials.

The findings of this study are consistent with previous research related to Mobile-Assisted Language Learning (MALL). Stockwell (2010) explained that mobile learning applications support vocabulary retention because learners receive repeated exposure to language input through interactive exercises. Similarly, Nation (2013) emphasized that vocabulary acquisition becomes more effective when learners encounter words repeatedly in different contexts. The digital platforms used in this study provided students with opportunities to practice vocabulary both inside and outside the classroom, which contributed to stronger vocabulary retention.

In addition, the findings support Mayer's (2009) multimedia learning theory, which states that students learn more effectively when information is presented through combinations of visual and auditory elements. The integration of pictures, pronunciation audio, animations, and contextual examples in digital applications helped students understand vocabulary meanings more easily. Mayer (2009)

explained that learners understand materials more efficiently when verbal information is combined with visual and auditory elements.

Overall, the findings indicate that technology-based learning creates more engaging and effective vocabulary learning environments. Students become more motivated and independent when they are allowed to interact with digital learning resources actively.

Speaking Ability Improvement

The second objective of this study was to investigate whether technology-based learning improves students' speaking ability. Speaking assessments were conducted before and after the treatment period to evaluate students' fluency, pronunciation, confidence, grammar usage, and vocabulary use during oral communication activities.

The pre-test results showed that students in both groups experienced similar difficulties in speaking English. Many students lacked confidence when expressing ideas orally, and several participants demonstrated pronunciation problems and limited vocabulary use. Some students also paused frequently during speaking activities because they struggled to organize sentences spontaneously.

After the treatment period, students in the experimental group demonstrated significant improvement in their speaking performance. The post-test results revealed that students who used technology-based learning platforms became more fluent and confident during oral communication tasks. Their pronunciation accuracy also improved because they regularly listened to authentic English pronunciation through YouTube videos and online learning materials. Authentic language exposure through videos and online communication can

improve students' pronunciation and speaking confidence (Godwin-Jones, 2018).

Table 2. *Speaking Assessment Scores*

Group	Pre-test Mean	Post-test Mean	Improvement
Experimental Group	67.1	84.5	17.4
Control Group	66.4	73.2	6.8

The data indicate that the experimental group experienced greater speaking improvement compared to the control group. Students who participated in technology-based learning activities became more comfortable speaking English because they had opportunities to practice independently and repeatedly outside the classroom.

Classroom observations showed that students in the experimental group were more active during speaking activities. They frequently practiced pronunciation using video materials and imitated expressions used by native speakers in YouTube videos. Some students also reported that digital platforms reduced their anxiety because they could practice speaking privately before performing in front of classmates. Technology-assisted learning environments may reduce speaking anxiety because students are allowed to practice independently before performing publicly (Kukulska-Hulme, 2012).

The questionnaire results further supported these findings. Approximately 85% of students stated that digital learning activities increased their confidence in speaking English. Meanwhile, 82% reported that watching English videos helped them improve pronunciation and listening comprehension. Students also mentioned that interactive learning applications made speaking practice less stressful and more enjoyable.

The improvement in speaking ability can be explained through constructivist learning theory proposed by Vygotsky (1978). According to the theory, learning occurs more effectively when learners actively interact with meaningful learning experiences. Technology-based learning environments provide opportunities for students to explore authentic language input, practice communication independently, and receive immediate feedback during the learning process.

The findings also align with communicative language teaching principles, which emphasize meaningful interaction and authentic communication. Communicative learning activities encourage learners to use language meaningfully in authentic situations (Richards, 2006). Through digital platforms, students were exposed to real-life language use and conversational expressions that are often unavailable in traditional textbook-based instruction.

Furthermore, the integration of multimedia resources contributed significantly to students' speaking development. Videos, audio recordings, subtitles, and interactive pronunciation exercises allowed students to improve speaking performance gradually. This supports previous studies suggesting that multimedia-based instruction positively influences speaking fluency and learner confidence.

Although the findings demonstrate positive results, several challenges were identified during the implementation process. Some students experienced technical difficulties such as unstable internet connections and limited mobile data access. In addition, a few students became distracted by social media notifications while using smartphones during learning activities. These issues suggest that successful technology integration requires effective classroom management and proper supervision from teachers.

Despite these limitations, the overall findings indicate that technology-based learning effectively enhances students' speaking ability and communication confidence.

Students' Perceptions toward Technology-Based Learning

The third objective of this study was to identify students' perceptions toward the use of technology-based learning in English classrooms. The questionnaire results demonstrated that students generally responded positively to the integration of digital learning tools.

Most participants stated that technology-based learning made classroom activities more engaging and interactive. Students appreciated the flexibility of learning independently outside the classroom using smartphones and internet-based platforms. They also believed that digital applications helped them understand English materials more clearly because the learning content included visual and audio support.

Approximately 88% of students agreed that technology-based learning increased their motivation to learn English. Digital learning environments can increase learner motivation because students are more engaged with interactive and student-centered activities (Dörnyei, 2001). Many students explained that digital applications felt more enjoyable than conventional learning methods because they included games, quizzes, and multimedia content. In addition, students reported that they were more willing to participate in classroom discussions and speaking activities after using digital learning platforms regularly.

Students also highlighted the importance of immediate feedback provided by learning applications. Through digital quizzes and pronunciation exercises, students could recognize mistakes directly and improve their performance independently. This learning flexibility encouraged students to

become more autonomous learners. Technology integration also promotes learner autonomy because students can independently explore learning resources outside the classroom (Benson, 2011).

However, some participants mentioned challenges related to internet access and digital distractions. A small number of students reported difficulties concentrating during online learning because social media notifications interrupted their focus. Others stated that unstable internet connections occasionally disrupted learning activities.

Despite these challenges, the majority of students expressed positive attitudes toward technology integration in ELT classrooms. They believed that digital learning tools should continue to be integrated into English learning activities because they create more interactive and student-centered learning environments.

Discussion of Overall Findings

The findings of this study indicate that technology-based learning positively affects students' English proficiency, especially vocabulary mastery and speaking ability. Students who learned through digital learning platforms demonstrated higher learning achievement, greater participation, and stronger motivation compared to students who learned through conventional teaching methods.

The results support previous studies related to technology integration and mobile-assisted language learning. Technology-based learning provides opportunities for repeated practice, authentic language exposure, multimedia interaction, and independent learning. These elements contribute to better language acquisition and improved learner confidence.

The findings also support constructivist learning theory because students actively participated in constructing knowledge

through interaction with digital resources and multimedia materials. According to Vygotsky (1978), learning occurs more effectively when students actively interact with their environment and participate in meaningful experiences. Technology-based learning environments encourage students to become active learners rather than passive recipients of information.

In addition, the study demonstrates that technology integration supports student-centered learning approaches in modern ELT classrooms. Technology-based instruction supports student-centered learning approaches in which learners actively construct knowledge through interaction and exploration (Siemens, 2005). Digital tools provide flexibility, accessibility, and personalized learning experiences that accommodate different learning styles and preferences.

However, technology should not completely replace teachers in the learning process. Teachers still play essential roles in guiding students, selecting appropriate digital resources, managing classroom activities, and maintaining students' focus during technology-based instruction. Although technology offers many educational benefits, ineffective classroom management and digital distractions may reduce learning effectiveness (Prensky, 2001). Effective technology integration requires balanced collaboration between digital tools and pedagogical strategies.

Overall, the findings suggest that technology-based learning can become an effective approach to improving students' English proficiency when implemented strategically and supported by proper classroom management and educational resources.

Conclusions

This study investigated the effectiveness of technology-based learning in improving students' English proficiency, particularly vocabulary mastery and speaking ability in English Language Teaching (ELT). Based on the findings obtained from vocabulary tests, speaking assessments, questionnaires, and classroom observations, it can be concluded that the integration of digital learning platforms positively influenced students' language learning outcomes. Students who learned through technology-based learning activities demonstrated significantly better improvement compared to students who learned through conventional classroom methods.

The results revealed that technology-based learning effectively enhanced students' vocabulary mastery. The use of digital applications such as Quizlet and Duolingo provided students with repeated exposure to vocabulary items, interactive exercises, visual learning materials, and immediate feedback. These features helped students memorize and understand vocabulary more effectively while also increasing their motivation to participate in learning activities. Students in the experimental group achieved higher post-test scores than students in the control group, indicating that technology integration contributed positively to vocabulary acquisition.

In addition to vocabulary improvement, technology-based learning also improved students' speaking ability. Students who participated in digital learning activities became more fluent, confident, and comfortable when speaking English. Exposure to authentic English materials through YouTube videos and multimedia resources helped students improve pronunciation, listening comprehension, and communication skills. The opportunity to practice speaking independently and repeatedly outside the classroom also

reduced students' anxiety during oral communication activities.

The findings further demonstrated that students had positive perceptions toward the integration of technology in English learning activities. Most participants considered technology-based learning more interesting, flexible, and engaging than traditional classroom instruction. Students appreciated the interactive nature of digital learning platforms because they encouraged independent learning and increased classroom participation. Technology-based learning also supported student-centered learning environments in which learners actively interacted with learning materials and explored knowledge independently.

The findings of this study support constructivist learning theory, which emphasizes active learning through meaningful experiences and interaction. Technology-based learning environments provide opportunities for students to construct knowledge through multimedia resources, interactive activities, and authentic language exposure. The study also supports multimedia learning theory, which suggests that the combination of visual, auditory, and textual information improves comprehension and retention.

Despite the positive outcomes, several challenges were identified during the implementation process. Some students experienced internet connectivity problems and distractions from non-academic smartphone use. These issues indicate that effective technology integration requires proper classroom management, adequate technological facilities, and teacher guidance. Technology should not completely replace the role of teachers but should function as a supportive instructional tool that enhances the learning process.

Overall, this study concludes that technology-based learning can become an effective approach to improving students'

English proficiency in modern ELT classrooms. The integration of digital learning tools creates more interactive, flexible, and motivating learning environments that support students' academic development. Therefore, teachers are encouraged to integrate technology strategically into classroom instruction while maintaining effective pedagogical practices.

Finally, future research is recommended to explore the long-term effects of technology-based learning in different educational contexts and investigate its impact on other language skills such as writing, listening, and reading comprehension. Further studies may also examine how different types of digital learning platforms influence students' motivation, learning autonomy, and overall language achievement.

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