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Faculty of Literature and Languages
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MASTER THESIS

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Sciences of the Language*

Presented by:
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**Investigating the Integration of Technology in Enhancing First Year
Learners' Speaking Proficiency: The Case of First Year EFL Learners at Dr
Saadane High School, Biskra**

*Submitted to the Department of Foreign Languages
in partial fulfillment of the requirements for the degree of
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Declaration

I, Wiam Hadji, solemnly affirm that the present document represents my original scholarly work and has not been previously submitted for any academic degree at any institution or university. Furthermore, I assert that all sources cited and quoted within this research are meticulously documented in the references section.

This research was conducted and completed at Mohammed Khider University of
Biskra, Algeria.

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Wiam Hadji

Dedication

I dedicate this thesis

To my parents, who have always supported and encouraged me. Your love and guidance have shaped who I am today, and I am deeply thankful for that.

To my siblings, whose presence and encouragement have given me strength. Your unwavering support reminds me of the importance of family.

To my friends and classmates, who have made this academic journey enriching and enjoyable. Your companionship has made every step meaningful.

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With heartfelt gratitude,

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Abstract

This thesis investigates the integration of technology to enhance EFL learners' speaking proficiency. The study examines the use of technology on the development of speaking skills, focusing on its potential contribution to language acquisition and oral communication proficiency among EFL learners. The research hypothesizes that integrating technology tools into language instruction will positively influence EFL learners' speaking skills, providing an innovative and effective approach to foreign language learning. The primary objective is to investigate the effectiveness of technology interventions in creating a dynamic and engaging learning environment that fosters improvement in speaking proficiency for EFL learners. To achieve these research objectives, a mixed methods approach is employed, incorporating questionnaires and interviews targeting EFL learners and teachers who have engaged with technology-enhanced speaking proficiency activities. The collected data are analyzed to evaluate the effectiveness of technology in enhancing speaking proficiency and overall communicative competence within the specific context of EFL learners. The treatment involved an 8-week intervention where the experimental group used speech recognition software for pronunciation practice, interactive dialogues, and automated feedback sessions, while the control group continued with the standard EFL curriculum. Pretests and posttests were administered to measure changes in speaking proficiency, with statistical analysis conducted using SPSS to determine the significance of the findings. Major results indicate that technology, particularly mobile applications, online platforms, and speech recognition software, significantly improves learners' pronunciation, fluency, and overall communicative competence. However, challenges such as limited access to technological resources, inadequate training for teachers, and learners' varying levels of digital literacy were identified. These insights highlight the need for comprehensive strategies to effectively integrate technology in EFL education, ensuring equitable access and sufficient support for both learners and educators.

Keywords: Technology-enhanced learning, EFL learners, speaking proficiency, language education, First-Year High School learners.

List of Abbreviations and Acronyms

CALL: Computer-Assisted Language Learning

EFL: English as a Foreign Language

ICT: Information, Communication, and Technology

SLP: Spoken Language Proficiency

TELL: Technology-Enhanced Language Learning

ELT: English Language Teaching

VR: Virtual Reality

AR: Augmented Reality

ASR: Automatic speech recognition systems

SPSS: Statistical Package for Social Sciences

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General Introduction

Introduction

Speaking proficiency holds a significant position in language learning, serving as a fundamental component for effective communication, cultural integration, and overall language acquisition. The significance of speaking proficiency is underscored by its role as the primary medium for meaningful communication in various contexts, including social, professional, and cultural interactions (Wilkins, 1972; Savignon, 2001). Mastery of speaking proficiency not only empowers learners to express themselves fluently but also facilitates their comprehension of others, enabling engagement in real-world conversations.

In the 21st century, the landscape of education is being reshaped by technology, playing an increasingly influential role in the teaching and learning process. This transformation is characterized by a fundamental shift in how students access information, engage with content, collaborate with peers, and interact with educators. The widespread presence of technology has democratized education, breaking the confines of traditional classrooms and providing students with unprecedented access to a vast array of information, resources, and learning opportunities.

The integration of technology in education has given rise to online learning platforms, such as Coursera, edX, and Khan Academy, which offer diverse courses to a global audience, often at lower costs than traditional education. The advent of adaptive learning software enables personalized instruction tailored to individual needs, allowing students to progress at their own pace while receiving targeted support (Bialystok, 2001). Technological tools like video conferencing, discussion forums, and collaborative platforms enhance speaking and teamwork among students and educators, particularly in remote and online learning environments.

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Furthermore, emerging technologies such as virtual reality (VR), augmented reality (AR), and gamified educational applications contribute to immersive learning experiences, making complex concepts more tangible and engaging for students (Kramsch, 1998).

The integration of virtual reality (VR) and augmented reality (AR) technologies in education has opened up new avenues for enhancing speaking proficiency. VR simulations allow students to immerse themselves in realistic scenarios where they can practice speaking in various contexts, such as simulated presentations or social interactions. By interacting with virtual environments and engaging in role-playing activities, students can develop their speaking skills in a safe and controlled setting, building confidence and fluency.

Similarly, AR applications offer opportunities for contextualized language learning, where students can overlay digital information onto real-world objects and environments to practice speaking in authentic situations. For example, language learners can use AR-enabled mobile applications to identify objects around them and describe them in the target language, reinforcing vocabulary acquisition and language production skills.

Moreover, online learning platforms like Coursera, edX, and Khan Academy provide access to a wide range of speaking-focused courses and resources. These platforms offer interactive modules, video lectures, and speaking exercises designed to improve oral communication skills in various contexts. Learners can engage in online discussions, collaborative projects, and peer feedback activities, fostering speaking proficiency through interaction and practice.

In essence, technology has transcended traditional teaching and learning styles, connecting students and educators globally and fostering collaborative projects that enable cross-cultural

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learning experiences. Additionally, tools like Duolingo and Babbel provide interactive language learning experiences, offering diverse exercises and real-life simulations to enhance speaking proficiency.

This research aims to investigate the intersection of technology and speaking proficiency in English as a Foreign Language (EFL) learners. Specifically, the study involved an 8-week intervention where the experimental group used speech recognition software for pronunciation practice, interactive dialogues, and automated feedback sessions, while the controlled group continued with the standard EFL curriculum. Pretests and posttests were administered to measure changes in speaking proficiency, with statistical analysis conducted using SPSS to determine the significance of the findings. By investigating the potential of technology to enhance speaking skills, this study seeks to contribute valuable insights to the ongoing discourse on language education and its adaptation to contemporary technological advancements.

1. Background of the Study:

Achieving speaking proficiency in a second or foreign language is a complex undertaking, marked by linguistic and psychological barriers. Pronunciation challenges, fluency issues, limited vocabulary, and grammar accuracy pose challenges to learners (Munro & Derwing, 1995; Nation, 2001; Bardovi-Harlig, 1992). Moreover, fear of making mistakes and a shortage of speaking opportunities hinder learners' willingness to engage (MacIntyre & Gardner, 1991; Savignon, 2001). Cultural barriers, encompassing norms and idiomatic expressions, further hinder effective communication (Kramsch, 1998). This study aims to address these challenges by investigating how technology can enhance speaking proficiency for English as a Foreign Language (EFL) learners.

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However, despite the advancements in educational technology, integrating these tools effectively to enhance speaking proficiency remains a significant challenge. Issues such as access to technology, digital literacy, and the quality of instructional materials pose barriers to implementation (Hew & Brush, 2007). Furthermore, the effectiveness of technology-enhanced language learning approaches varies, and there is a need to identify best practices and pedagogical strategies (Ghanizadeh et al., 2015). Additionally, concerns regarding the authenticity of digital interactions and the lack of face-to-face communication in virtual environments may hinder the development of speaking skills (Yang & Chen, 2007).

Therefore, this research aims to address these challenges by investigating how technology can be utilized to enhance speaking proficiency among English as a Foreign Language (EFL) learners. By investigating the integration of various technological tools, identifying potential barriers, and examining effective pedagogical approaches, this study seeks to provide insights into optimizing the use of technology in language learning contexts.

2. Aim of the Study:

The primary aim of this study is to investigate and understand students' perceptions regarding the use of technologies, including speech recognition software, language learning applications, and online resources, as tools to enhance speaking proficiency in an English as a Foreign Language (EFL) context. The study seeks to investigate how these technological interventions impact students' learning experiences and contribute to the development of effective speaking skills.

Additionally, the secondary aim is to identify potential challenges associated with the incorporation of these technologies within the EFL classroom. By investigating both the positive perceptions and challenges, the study aims to provide a comprehensive understanding of the

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different dynamics surrounding the integration of technology in the pursuit of enhanced speaking proficiency among EFL learners.

3. Research Questions

This research investigates key inquiries related to the integration and role of technology in enhancing speaking proficiency among English as a Foreign Language (EFL) learners. The following questions guide the investigation:

1. How do EFL learners perceive the effectiveness of using language learning applications in enhancing their speaking proficiency?
2. What is the impact of using online resources on the development of speaking skills among EFL learners, according to their perspectives?
3. What challenges do EFL learners encounter when using technology, such as language learning applications and online resources, into the classroom for the purpose of improving speaking proficiency?

4. Research Hypothesis

H0: If English as a Foreign Language (EFL) learners actively engage with technology, including language learning applications and online resources, in the language learning process, then there will be no significant enhancement in their speaking proficiency.

H1: If English as a Foreign Language (EFL) learners actively engage with technology, including language learning applications and online resources, in the language learning process, then there will be a significant enhancement in their speaking proficiency.

5. Significance of the Study:

This research holds significance by providing valuable insights into the use of technology, including language learning applications and online resources, in enhancing speaking proficiency among English as a Foreign Language (EFL) learners. The findings contribute to optimizing language education strategies, fostering improved communication skills crucial for cultural integration and global collaboration. This study's detailed investigation aims to inform educators and policymakers, guiding the integration and use of technology for more effective language learning outcomes.

6. Methodology

This research adopts a *mixed methods* approach to investigate the integration of technology for enhancing speaking proficiency among English as a Foreign Language (EFL) learners. Participants, actively engaging with language learning applications and online resources, are involved in both quantitative and qualitative data collection.

The treatment component of this study involves an 8-week intervention where the experimental group uses speech recognition software for pronunciation practice, interactive dialogues, and automated feedback sessions. In contrast, the controlled group continues with the standard EFL curriculum without any technological intervention. Pretests and posttests are administered to both groups to measure changes in speaking proficiency.

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A questionnaire featuring Likert-scale questions and closed-ended items is administered to capture quantitative insights into participants' perceptions of the use of technology in enhancing speaking proficiency. Concurrently, semi-structured interviews are conducted with five teachers to delve deeper into their experiences, addressing challenges faced and suggestions for improvement in utilizing technology for speaking proficiency development.

The collected data undergoes statistical analysis for quantitative patterns and thematic analysis for qualitative insights. Statistical analysis is conducted using SPSS to determine the significance of the findings, including pretest and posttest comparisons between the experimental and control groups.

Ethical considerations are of primary concern, ensuring participant confidentiality, informed consent, and responsible data handling. This comprehensive mixed-methods approach aims to provide a nuanced understanding of the use of technology in enhancing and shaping speaking proficiency in EFL learners. The research contributes valuable insights to the field and includes control measures through random sampling to enhance the reliability of the study.

7. Population and Sample:

The population for this study includes First-Year Secondary School EFL learners and selected teachers from Dr. Saadane High School. The students represent the primary focus, while a subset of EFL teachers, chosen for their expertise in language education, will serve as key informants.

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Sample Selection:

A random sample of First-Year Secondary School EFL learners will be chosen from Dr. Saadane High School, ensuring diversity in language proficiency levels and technological familiarity among the students. Additionally, a subset of EFL teachers, selected based on their availability and willingness to participate, will be approached as key informants.

Data Collection and Analysis:

Structured questionnaires are employed to collect quantitative data regarding students' perspectives on the integration of technology to enhance speaking proficiency. Additionally, semi-structured interviews are conducted with both students and selected EFL teachers to obtain qualitative insights into the challenges faced and suggestions for improvement. This integrated approach allows for simultaneous investigation of quantitative patterns and qualitative insights.

The treatment component involves an 8-week intervention where the experimental group uses speech recognition software for pronunciation practice, interactive dialogues, and automated feedback sessions, while the controlled group continues with the standard EFL curriculum without any technological intervention. Pretests and posttests are administered to measure changes in speaking proficiency.

Quantitative data undergo statistical analysis, and qualitative data is thematically analyzed for context-specific insights. This comprehensive approach ensures a robust investigation of the effectiveness of technology in enhancing speaking proficiency.

Student Participants:

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The study will include a random sample of two groups of EFL learners from First Year High School classes at Dr. Saadane High School.

Teacher Participants:

A subset of EFL teachers (5 teachers) from Dr. Saadane High School, selected based on their expertise and availability, will participate as key informants in the study.

8. Structure of the Thesis

This thesis revolves around the independent variable, "technology integration for speaking proficiency," and the dependent variable, "enhanced speaking proficiency in EFL learners." Structurally, it is divided into two main sections: *the theoretical section*, encompassing a literature review on these variables, and *the practical section*, representing the fieldwork of the study and analysis.

Chapter One - "Integrating Technology to Enhance Speaking Proficiency" - introduces the study, providing a theoretical background of technology in language education. It explores Computer-Assisted Language Learning (CALL), Technology-Enhanced Language Learning (TELL), and E-Learning, setting the stage for the integration of technology to enhance speaking proficiency among English as a Foreign Language (EFL) learners.

Chapter Two - "Leveraging Technology for EFL Speaking Proficiency" - focuses on the importance of speaking proficiency, thoroughly examining factors influencing language acquisition. It investigates individual, sociocultural, and educational aspects, emphasizing the role of cultural diversity and contextual influences on speaking development. Additionally, this chapter discusses pedagogical strategies for integrating technology in speaking instruction.

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Chapter Three - “ Analysis and Discussion of Technology Integration for Speaking Proficiency” - presents the research design and methodology, detailing the study design, population, and sample. It delves into the data collection methods, including students' questionnaires and teacher interviews. This chapter explains the treatment that the researcher adopts in this study. The treatment involves an 8-week intervention where the experimental group uses speech recognition software for pronunciation practice, interactive dialogues, and automated feedback sessions, while the control group continues with the standard EFL curriculum without any technological intervention. Pretests and posttests are administered to measure changes in speaking proficiency. The findings from the analysis are coordinated and discussed, providing insights into the impact of using technology on speaking proficiency. The chapter concludes with a general conclusion of the study, acknowledging limitations and offering pedagogical implications and recommendations for future research.

Chapter One:
**Technology Integration for
Enhanced Speaking Proficiency**

Introduction

1.1 Theoretical Background of Technology in Language Education

1.1.1 Computer-Assisted Language Learning (CALL)

1.1.2 Technology-Enhanced Language Learning (TELL)

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1.2.1. Definition of Technology-Enhanced Language Learning

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1.2.3. Technology for Enhancing Spoken Language Proficiency

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1.3.2. Benefits of Integrating Technology in Foreign Language Learning

1.3.3. Limitations of Integrating Technology in Foreign Language Learning

Conclusion

Introduction

1. Theoretical Background of Technology in Language Education

In this era of rapid technological advancement, the intersection of technology and language education has become pivotal. This chapter initiates an investigation into the influence of technology on speaking proficiency. The study shifts the spotlight to the theoretical background of technology in language education and its specific relevance to the enhancement of speaking skills among English as a Foreign Language (EFL) learners. The theoretical foundation delves into key components, such as Computer-Assisted Language Learning (CALL), Technology-Enhanced Language Learning (TELL), and E-Learning. These concepts pave the way for comprehending how technology integration can reshape language education. Moving through the subsequent sections, from defining technology-enhanced language learning to exploring its applications and tools, the chapter seeks to uncover the potential benefits and limitations of this integration in enhancing speaking proficiency.

1.1 Theoretical Background of Technology in Language Education

The integration of Technology in language education has emerged as a cornerstone for advancing language learning strategies, particularly among EFL learners at high school. Parvin and Salam (2015) underscore the transformative potential of technology in English language classrooms, emphasizing its efficacy in creating an immersive and dynamic language learning environment. This aligns with the perspective of the American Council on The Teaching of Foreign Languages (ACTFL, 2013), which recognizes technology as a driving force for enhancing language proficiency. The acknowledgment of the essential role of technology in language

learning is further reinforced by Engida (2011), who highlights the broader impact of ICT on teacher development, indirectly influencing students' language learning experiences.

Moreover, when considering the specific context of high school EFL learners, technology integration becomes even more crucial. High school students often face unique challenges in developing speaking proficiency, including limited exposure to authentic language environments and fewer opportunities for meaningful interaction. By utilizing technology, educators can provide these learners with access to authentic language input, interactive speaking activities, and opportunities for real-world communication, thereby addressing their specific needs and enhancing their speaking proficiency in English (ACTFL, 2013).

In recent years, technology has become a driving force in reshaping language education paradigms. Parvin and Salam's (2015) insights emphasize the positive outcomes of integrating technology into English language classrooms, showcasing its potential to elevate speaking proficiency (Parvin & Salam, 2015). The ACTFL (2013) supports this stance by acknowledging the capacity of technology to enrich language learning across diverse contexts. Engida's (2011) emphasis on a technology-enhanced Teacher Development Model contributes to the understanding of how the utilization of technology extends beyond being a tool solely for learners. It serves as a vital mechanism for educators to enhance their capabilities, fostering professional development and enabling innovative teaching methodologies. This perspective underscores the multifaceted role of using technology in education, emphasizing its dual impact on both learners and educators as they collectively strive to elevate the teaching and learning experience. This model suggests that through the strategic use of technology, teachers can expand their pedagogical repertoire, explore new teaching methodologies, and refine their instructional practices.

By engaging with technology, educators can access a wealth of resources, participate in online communities of practice, and engage in collaborative learning experiences that contribute to their ongoing professional growth. In the context of enhancing speaking proficiency among EFL learners in high school, Engida's model underscores the importance of equipping teachers with the necessary skills and knowledge to effectively leverage technology in language education. It highlights the need for professional development initiatives that empower educators to integrate technology seamlessly into their teaching practices, ultimately leading to more engaging and effective language learning experiences for students (Engida, 2011). In the context of investigating the use of technology for enhancing speaking proficiency in EFL learners, these theoretical underpinnings provide a foundation for recognizing the transformative impact of utilizing technology in language education (Engida, 2011).

1.1.1 Computer-Assisted Language Learning

In the investigation of the use of technology in advancing and enhancing speaking proficiency for EFL learners, Computer-Assisted Language Learning (CALL) stands out as a transformative avenue. The endeavor to enhance language skills through technology resonates with the core principles of CALL, as it provides an interactive platform for language learners. According to Le Thi Hoa (2023), the investigation aligns with this perspective, emphasizing the broader impacts of CALL on language proficiency development.

Moreover, CALL facilitates learner autonomy, allowing students to take ownership of their learning journey and progress at their own pace. This aligns with the overarching goal of enhancing speaking proficiency, as learners are empowered to actively engage in speaking activities, experiment with language structures, and refine their pronunciation with the aid of technology.

Additionally, according to Le Thi Hoa's (2023) findings, CALL can bridge geographical barriers, connecting learners to native speakers and authentic language contexts through digital platforms and online resources. As such, the integration of CALL in language education not only enhances speaking proficiency but also cultivates a deeper appreciation for cultural diversity and global communication. In essence, Le Thi Hoa's exploration highlights the transformative potential of CALL in advancing speaking proficiency among EFL learners, signaling a shift towards innovative and effective language learning practices enabled by technology.

Similarly, AbuSeileek's (2007) study, focusing on pronunciation instruction through CALL, adds valuable insights within the context of technology-mediated language learning. CALL, in the context of the research, emerges as a dynamic facilitator for EFL learners, offering personalized and engaging experiences crucial for the improvement of speaking skills (AbuSeileek, 2007). The incorporation of CALL in this investigation is rooted in the belief that technology can significantly contribute to the advancement of language learning, especially in the realm of speaking proficiency.

1.1.2 Technology-Enhanced Language Learning

Technology-Enhanced Language Learning (TELL) represents a radical change in language education, intricately tied to the investigation of the use of technology in enhancing speaking proficiency in EFL learners. The integration of TELL, facilitated through Internet-based platforms and multimedia technologies, transforms language learning methodologies. In the absence of a natural English-speaking environment, learners benefit from the global reach of the Internet, providing access to authentic language resources and fostering direct communication (Ganderton, 1998; Hellebrandt, 1999; Warschauer, 1996).

Aligned with the five Cs advocated by the American Council on the Teaching of Foreign Languages (ACTFL), Technology-Enhanced Language Learning (TELL) serves as a conduit for communication, culture, connections, comparisons, and communities, enriching language learning experiences. The transformative approach of TELL, as exemplified in the Advanced Joint English Teaching (AJET) program using Internet technology, contributes to creating immersive language learning environments that particularly enhance speaking proficiency (Yang & Chen, 2007). This innovative approach not only enriches speaking proficiency but also cultivates digital literacy skills and fosters a communicative and culturally rich learning environment. As such, the integration of TELL strategies, exemplified by initiatives such as AJET, represents a promising avenue for enhancing speaking proficiency among EFL learners in high school settings, aligning with the broader objectives of technology-enhanced language education.

As the educational landscape evolves, this investigation of the use of TELL provides valuable insights into the dynamic interplay between technology and language proficiency enhancement, specifically in the context of speaking skills. The integration of Internet technology in language learning opens avenues for meaningful communication, cultural understanding, and the development of a range of speaking skills in real-world contexts. This aligns seamlessly with the primary objective of investigating the use of technology in enhancing speaking proficiency in EFL learners.

1.1.3 E-Learning

In the rapidly evolving landscape of language education, E-learning emerges as a transformative tool for enhancing speaking proficiency in EFL learners (Yang & Chen, 2007; Allam & Elyas, 2016). This paradigm shift is particularly relevant in modern educational settings. E-learning,

defined as computer-enabled learning of EFL, utilizes internet-based platforms and multimedia technologies to overcome traditional constraints (Smith, 2000). For instance, this could involve the incorporation of language learning applications that utilize video conferencing for interactive speaking exercises. The integration of E-learning offers solutions to traditional limitations, providing a platform for students to develop communication skills in an authentic English environment (Yang & Chen, 2007). It facilitates the acquisition of language skills, including listening, speaking, reading, and writing, in real-world contexts, offering students the flexibility to access language resources and engage in direct communication with native speakers (Debski & Gruba, 1999; Yang & Chen, 2007). Through this integration, students gain opportunities to enhance their speaking proficiency by engaging in real-time conversations, listening to authentic language usage, and practicing language skills in varied contexts.

Despite its potential benefits, the implementation of E-learning in EFL education is not without challenges, as Mutambik (2018) suggests. These challenges encompass issues such as adapting to varied technological proficiency levels among students, ensuring equitable access to digital resources, and addressing potential disparities in the availability of necessary hardware and internet connectivity. Understanding and navigating these challenges are essential aspects of the broader investigation into the effectiveness of utilizing technology in elevating speaking proficiency within the EFL context.

The capabilities of E-learning in English language teaching are substantial, providing a platform for students to develop communication skills and engage in authentic language contexts (Yang & Chen, 2007). The limitations of traditional face-to-face learning, such as a lack of authentic English environments and large class sizes, can be reduced through E-learning, fostering a virtual space

for interactive communication (Lee, 2002; Yang & Chen, 2007). Likewise, the integration of automatic speech recognition technology, commonly recognized as the capability of a computer system to automatically transcribe spoken language into written text, such as the innovative speech recognition feature found in applications such as Rosetta Stone, enhances language learning by providing a dynamic platform for speaking practice. Through this technology, learners immerse themselves in simulated conversations with virtual language tutors and engage in interactive language exercises that deliver instant feedback on pronunciation and fluency. This real-time feedback not only boosts speaking proficiency but also nurtures learner autonomy and self-assessment (Chiu, Liou, & Yeh, 2007; Yang & Chen, 2007).

Despite these advantages, the success of E-learning relies on the active engagement of both students and teachers (Garrison, 2011). This underscores the importance of meaningful interaction and collaboration within digital learning environments to achieve optimal outcomes.

1.2 Integration of Technology to Enhance Speaking Proficiency in EFL Learners

The integration of technology in EFL education undergoes a transformative role, particularly in advancing speaking proficiency among learners. By utilizing multimedia resources and internet-based platforms, students actively participate in authentic language contexts, transcending the limitations imposed by traditional teaching methods. This fundamental shift signifies more than just a change in tools; it marks a comprehensive alteration in the methodology of language education.

In this context, the integration of technology contributes to a dynamic and effective approach in developing oral communication skills. Learners not only access diverse and real-world language scenarios but also actively engage in interactive speaking exercises facilitated by technology. This

immersion in authentic communication environments, facilitated by multimedia elements and online platforms, provides learners with practical experiences, ultimately fostering a more profound and nuanced development of their speaking proficiency.

1.2.1 Definition of Technology-Enhanced Language Learning

Technology-Enhanced Language Learning (TELL) is the strategic integration of technical processes, methods, or knowledge to enhance speaking proficiency in EFL learners (Shadiev & Yang, 2020). Building upon this definition, recent studies, such as the one by Shadiev and Yang (2020), Technology-Enhanced Language Learning (TELL) actively involves learners in targeted exercises. These exercises, encompassing activities such as pronunciation training and interactive conversations, leverage digital tools to ensure a more personalized and effective enhancement of speaking skills. This strategic approach contributes substantially to measurable improvements in language learning outcomes, as evidenced by research conducted by Golonka et al. (2014). As an integral component of language education, TELL contributes to the ongoing investigation of the use of technology in fostering enhanced speaking proficiency, emphasizing its relevance in the evolving landscape of EFL pedagogy, where innovative approaches are continually sought to meet the diverse needs of language learners.

1.2.2 Applications of Technology in Language Education

The integration of technology in language education signifies a transformative shift, particularly in its impact on speaking proficiency. The adoption of digital tools, exemplified by online language learning platforms, transforms traditional language teaching and learning approaches, introducing interactive and collaborative learning experiences. In this context, according to Wu and Lambenicio (2022), learners can engage in self-paced and autonomous language practice, allowing

them to tailor their learning journey to individual needs and preferences. This autonomy empowers learners to take control of their learning process, fostering a sense of ownership and motivation in their language learning endeavors.

This integration not only enriches the learning environment but also plays a pivotal role in the development of English language proficiency, emphasizing the practical application of language skills. By utilizing technology, learners can immerse themselves in authentic language contexts, engage in real-time speaking exercises, and receive instant feedback, all of which contribute to a more dynamic and effective enhancement of speaking proficiency. Consequently, the incorporation of technology in language education aligns seamlessly with the broader objectives of technology-enhanced language education, emphasizing the significant role it plays in shaping and advancing speaking proficiency among language learners.

1.2.2.1 Online Platforms and Language Learning

Online platforms in language education emerge as a vital element, playing a significant role in enhancing speaking proficiency among English as a Foreign Language (EFL) learners. These digital platforms provide a dynamic space, fostering interactive learning experiences that allow students to immerse themselves in authentic language contexts and resources. In the constantly evolving landscape of language education, online platforms become instrumental in offering accessible and flexible opportunities for EFL learners to practice and refine their oral communication skills.

Duolingo, Babbel, and Rosetta Stone, serve as prime examples of the transformative role technology plays in enhancing speaking proficiency among English as a Foreign Language (EFL) learners. These platforms offer a variety of interactive features, including virtual conversations,

speech recognition technology, and language immersion exercises, which enable students to engage actively in authentic language contexts. For instance, Duolingo's "Speaking Practice" feature allows learners to practice speaking by repeating phrases and sentences, receiving instant feedback on pronunciation and fluency. Similarly, Babbel incorporates interactive dialogues and role-playing scenarios that simulate real-life communication situations, providing learners with practical speaking practice. Moreover, the speech recognition feature in Rosetta Stone application enables learners to engage in simulated conversations with virtual tutors, receiving personalised feedback on their pronunciation and intonation. By utilizing these online platforms, EFL learners gain access to flexible and accessible opportunities to practice and refine their oral communication skills, ultimately contributing to their overall speaking proficiency.

This fundamental shift toward online language learning aligns seamlessly with the primary aim of investigating the use of technology in augmenting speaking proficiency. It is exemplified by the transformative impact of immersive virtual language environments, such as language exchange platforms or virtual conversation spaces. These platforms not only provide EFL learners with accessible and flexible opportunities but also create an environment where they can actively engage in practical speaking exercises, fostering the development of their oral communication skills. This underscores the essential role of online platforms in facilitating a more dynamic and effective approach to enhancing speaking proficiency in language education.

1.2.2.2 Mobile Applications for Language Learning

Investigating language learning through mobile applications is central to understanding the transformative use of technology in EFL education, particularly in enhancing speaking proficiency. These applications, exemplified by Duolingo or Babbel, offer learners a portable and

personalized approach, fostering a dynamic learning experience beyond traditional classroom constraints.

The utilization of mobile applications becomes a powerful tool in empowering EFL learners to actively practice speaking, listening, reading, and writing skills at their convenience. This active engagement directly contributes to the investigation of utilizing technology on advancing speaking proficiency. In this context, the evolving landscape of language education is distinctly shaped by the integration of mobile applications, providing flexible opportunities for learners to practice and develop their oral proficiency. The strategic incorporation of technology, through mobile applications, not only expands the accessibility of language learning but also significantly contributes to the enhancement of speaking skills within the EFL context. Furthermore, the convenience of mobile applications allows learners to engage in language practice anytime, anywhere, fostering a seamless integration of language learning into their daily routines and lifestyles.

1.2.2.3 Technology-Assisted Pronunciation Practice

Investigating technology-assisted pronunciation practice is essential for grasping the evolving use of technology in enhancing speaking proficiency among EFL learners. This investigation aligns directly with the primary objective of investigating how technology influences language education, particularly in the context of speaking proficiency.

The investigation of technology-assisted pronunciation practice goes beyond evaluating its impact and contributes to a comprehensive understanding of how technology actively shapes communicative competence. In the field of pronunciation enhancement, technology provides

learners with targeted and interactive tools. Pronunciation applications like ELSA Speak and FluentU, coupled with speech recognition software such as Google's Pronunciation Tool, furnish learners with real-time feedback, facilitating hands-on engagement. These platforms not only provide learners with access to vast collections of language resources but also offer real-time feedback on their pronunciation efforts. By utilizing such technology, learners engage in hands-on practice sessions where they receive immediate guidance and correction, facilitating progressive improvement and skill development. Thus, technology-assisted pronunciation practice not only enhances learners' ability to articulate sounds accurately but also cultivates a deeper understanding of phonetic nuances, ultimately contributing to their overall communicative competence in the target language.

Through the strategic use of these technological tools, learners actively enhance their articulation, intonation, and overall pronunciation accuracy. This hands-on approach emphasizes the practical utilization of technology in language education, directly addressing and enhancing specific aspects of speaking proficiency for EFL learners.

1.2.3 Technology for Enhancing Speaking Proficiency

Investigating the integration of technology for enhancing speaking proficiency highlights its transformative role in language education (Ahmad, 2016). Ahmad's (2016) research emphasizes the significance of Technology-Assisted Language Learning (TALL) as an important tool for skill development and fostering a passion for task-based learning, particularly in the context of speaking proficiency among high school learners. By integrating technology into language education, educators can create immersive learning experiences that resonate with the digital-native generation, thus fostering a deeper engagement with the material. Likewise, the incorporation of

various technological tools, such as mobile applications, online platforms, and speech recognition software, provides dynamic opportunities for EFL learners to engage in authentic language contexts and enhance their oral communication skills. This emphasis on technology-mediated learning not only enriches students' language acquisition journey but also instills a sense of motivation and empowerment as they actively participate in their own learning process.

Ahmad's (2016) study specifically underscores the substantial impact of these digital tools on motivation, vocabulary acquisition, and grammatical accuracy within the domain of speaking proficiency. Investigating the evolving landscape of language education through technology-driven pronunciation practice becomes essential in understanding the specific benefits and challenges encountered by EFL learners in enhancing their speaking skills. This aligns seamlessly with the broader goal of revealing the nuanced use of technology in enhancing communicative competence, with speech recognition software such as Google's Pronunciation Tool serving as a pivotal example. Such software offers real-time feedback, assisting learners in enhancing their pronunciation and overall oral proficiency.

1.3 Use of Technology in Enhancing Speaking Proficiency

The strategic use of technology in enhancing speaking proficiency represents a pivotal shift in language education. By incorporating dynamic tools such as mobile applications, online platforms, and advanced speech recognition software, language learners engage in personalized and interactive experiences. These technological interventions go beyond traditional approaches, focusing on enhancing pronunciation, expanding vocabulary, and elevating overall communicative competence within the specific context of spoken language. Unlike conventional methods, these technological interventions are designed to address specific aspects of speaking proficiency comprehensively.

Firstly, pronunciation receives special attention, as advanced speech recognition software, such as Google's Pronunciation Tool or ELSA Speak, provides learners with real-time feedback on their pronunciation accuracy and intonation patterns. By practicing with these tools, students can refine their pronunciation skills and develop a more authentic accent, thus enhancing their overall speaking proficiency.

Moreover, the use of technology facilitates vocabulary expansion through interactive language learning applications like Duolingo or Quizlet. These platforms offer engaging exercises and games that not only introduce new words but also reinforce their usage in context, thereby enriching learners' lexical repertoire and enhancing their ability to express themselves fluently and accurately.

Collaboratively, these technologies contribute to a transformative learning environment, emphasizing the nuanced enhancement of speaking proficiency and paving the way for the future of language education.

1.3.1 Technology Tools for Enhancing Speaking Proficiency

Investigating technology tools dedicated to enhancing speaking proficiency reveals their transformative impact on language learning. Recent studies emphasize how these tools play a fundamental role in providing extended oral practice time, significantly contributing to the development of oral proficiency (Golonka et al., 2014). The extended practice time allows learners to construct and enhance their oral language skills, offering unique benefits not replicated with written materials.

Automatic speech recognition, as highlighted by Jiang et al. (2021), proves effective in enhancing the complexity of oral language, particularly in a flipped classroom setting. In this model, the focus shifts from traditional teacher-centered instruction to a student-centered approach, enabling students to access learning materials independently before class. Automatic speech recognition offers real-time feedback on pronunciation and speaking skills, providing valuable insights and opportunities for improvement. Accessible through various devices, this technology offers learners a convenient means for oral English learning and practice, aligning with the evolving landscape of education to make language learning more flexible and accessible.

Albahiri and Alhaj (2020) emphasize the role of visual elements and YouTube technology in structuring programs to enhance speaking proficiency. The integration of visual aids captures learners' attention and creates a dynamic learning environment that mirrors real-world language usage. This visual-spatial support enhances the overall learning experience, making it more engaging and impactful.

Halenko's exploration (2018) of computer-assisted language learning (CALL) tools focuses on creating opportunities for language practice and interaction with native speakers, important for enhancing speaking proficiency. CALL tools serve as a bridge for learners to connect with authentic language use, significantly contributing to their communicative competence.

Collectively, these studies not only illuminate the current state of technology-enhanced language learning but also underscore its potential in transforming speaking proficiency across varied educational settings for EFL learners.

1.3.2 Benefits of Integrating Technology for Enhancing Speaking Proficiency

The incorporation of technology into language learning environments yields numerous advantages, with a distinct focus on enhancing speaking proficiency among EFL learners. Recognizing technology as a fundamental societal component underscores the importance of exposing learners, even at a young age, to diverse technological tools (Hew & Brush, 2007). Examples of these contemporary tools include interactive online language exchange platforms such as Tandem and HelloTalk, discussion forums, state-of-the-art speech recognition software such as Google's Pronunciation Tool and ELSA Speak, as well as immersive virtual language environments like language exchange platforms and virtual conversation spaces. This comprehensive integration not only enriches the language learning experience but also actively contributes to the development of oral communication skills in authentic contexts (Lewis, 2004; Lama, 2006).

In the context of enhancing speaking proficiency, technology not only aids in the development of biliteracy and bilingualism but also demonstrates a positive impact on academic performance and attendance, especially among at-risk learners (Muir-Herzig, 2004; Xu, 2010). Moreover, the integration of technology introduces innovative approaches to language learning, allowing EFL learners to engage with diverse linguistic content through cutting-edge technological tools. Examples include state-of-the-art speech recognition software (e.g., Google's Pronunciation Tool, ELSA Speak) and immersive virtual language environments (e.g., language exchange platforms, virtual conversation spaces). This not only enhances their speaking proficiency but also fosters a deeper understanding of language nuances, intonations, and real-world communication scenarios. Thus, technology emerges as a valuable asset in tailoring language learning experiences specifically to the enhancement of speaking proficiency (Feiman-Nemser & Remillard, 1995; Hubbard & Levy, 2006).

1.3.3 Limitations of Integrating Technology in Foreign Language Learning

While the integration of technology into language learning environments offers substantial benefits, there are inherent limitations that warrant consideration. One notable limitation is the potential for a digital divide, where disparities in access to technology among learners may exacerbate existing inequalities (Hew & Brush, 2007). Some students may lack access to the necessary devices or reliable internet connections, hindering their participation in technology-enhanced language practice and impacting the development of their speaking skills..

Another limitation lies in the possible resistance or hesitancy among teachers to fully embrace and effectively utilize technology in language instruction (Keengwe, 2007). Factors such as inadequate training, lack of technological support, and teachers' hesitation towards the integration of technology into language learning environments may impede its seamless integration into the curriculum and hinder the optimal development of students' oral communication abilities (Feiman-Nemser & Remillard, 1995).

Furthermore, despite the wide array of technological tools available, not all of them may align with the diverse learning styles and preferences of individual learners, which is particularly relevant when aiming to enhance speaking proficiency (Lewis, 2017). Tailoring technology to cater to various linguistic needs and proficiency levels poses a significant challenge, potentially limiting its overall effectiveness in promoting oral communication skills.

Moreover, the dynamic nature of technology and the rapid emergence of new tools may pose challenges in terms of keeping educational resources current and relevant, impacting the continuous effort to enhance speaking proficiency (Hew & Brush, 2007). Outdated or obsolete

technology may hinder the intended learning outcomes, especially in the realm of spoken language, and fail to engage students effectively in language practice.

Conclusion

In a nutshell, this chapter investigates the intricate relationship between technology and language education, with a specific focus on enhancing speaking proficiency among English as a Foreign Language (EFL) learners in an era of rapid technological advancement. The theoretical foundation delves into key concepts like Computer-Assisted Language Learning (CALL), Technology-Enhanced Language Learning (TELL), and E-Learning, providing a basis for understanding how technology transforms language education.

Scholarly insights highlight the positive outcomes of integrating technology into English language classrooms, emphasizing its potential to elevate speaking proficiency. The subsequent sections investigate various applications of technology, from Online Platforms and Mobile Applications to Technology-Assisted Pronunciation Practice, shedding light on the dynamic landscape of the use of technology in language learning, particularly in the context of speaking proficiency.

Despite the outlined advantages and transformative potential, it is essential to acknowledge challenges such as the digital divide, teacher resistance, and the need for continuous adaptation to evolving technologies. This chapter establishes the groundwork for a comprehensive investigation of how technology serves as an essential tool in fostering nuanced and effective speaking proficiency among EFL learners.

Chapter Two:
Technological Enhancement of
Speaking Proficiency

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Conclusion

Introduction

This chapter investigates how technology shapes the development of speaking proficiency among EFL learners. The investigation encompasses the technological transformation in oral proficiency, investigating its impact on effective speaking proficiency and fostering oral skills in digital language environments. Factors that play a role in shaping speaking proficiency in the digital era, including linguistic determinants and socio-cognitive influences, will be thoroughly investigated.

Additionally, the chapter sheds light on the digital and contextual impacts on oral proficiency, emphasizing technological diversity and language learning in digital contexts. Pedagogical strategies for integrating technology into language instruction is explored, covering aspects such as formality in digital platforms, tailoring technology for diverse purposes, and understanding language and style in technology-mediated communication.

This chapter concludes by focusing on interactive platforms, investigating how technology can be utilized to elevate speaking proficiency. This investigation aims to provide valuable insights into how EFL learners can effectively use technology to enhance their speaking skills in various engaging ways.

2.1.1 Technological Transformation in Speaking Proficiency

Technological transformation in speaking proficiency signifies a radical shift in language learning methodologies. Traditional language instruction often relied on rote memorization and repetition, with limited opportunities for authentic spoken language practice (Shadiev & Yang, 2020). However, with the advent of technology, learners now engage with language in interactive and immersive ways.

Digital platforms, such as language learning applications and online speaking forums, provide learners with real-time opportunities to practice speaking in diverse contexts. For example, virtual language exchange platforms enable EFL learners to connect with native speakers worldwide, fostering authentic and culturally rich speaking experiences. The integration of automatic speech recognition technology further enhances this transformation, offering immediate feedback on pronunciation and intonation.

Additionally, the use of virtual reality (VR) and augmented reality (AR) applications opens new possibilities for simulating real-world speaking scenarios. For example, learners can use VR platforms to engage in simulated conversations with virtual native speakers in diverse cultural settings, allowing them to practice language skills in context. Similarly, AR applications enable learners to overlay digital content onto their physical environment, creating interactive language-learning experiences that blend virtual and real-world elements. Thus, Learners can immerse themselves in virtual environments where they interact with native speakers, enhancing not only their linguistic skills but also their cultural understanding.

Furthermore, adaptive learning platforms, such as Duolingo, utilize machine learning algorithms to analyze learners' speech patterns and tailor exercises to address specific areas of

improvement. This adaptive approach ensures a focused and efficient enhancement of speaking proficiency, emphasizing precision in language use (Ahmad, 2016, p. 120). This integration of technology not only offers personalised learning experiences but also empowers learners to actively engage in their language learning journey.

2.1.2 Technological Impact on Effective Speaking Proficiency

The integration of technology has significantly impacted the effectiveness of speaking proficiency in language learning. Unlike traditional methods that often struggle to provide personalized feedback and targeted improvement strategies, technology offers dynamic solutions for enhancing speaking skills (Asratie et al., 2023). One key impact lies in the accessibility of online resources and applications designed explicitly for speaking practice. Language learners can currently access a multitude of platforms offering tailored exercises, interactive lessons, and real-time speaking opportunities. Video conferencing tools, language exchange applications, and virtual classrooms create an environment where learners can engage in authentic conversations, receive immediate feedback, and enhance their speaking abilities (Asratie et al., 2023).

Moreover, technology facilitates self-paced learning, allowing individuals to revisit speaking exercises and track their progress over time. Automatic speech recognition (ASR) systems, commonly integrated into language learning applications, provide instant evaluations of pronunciation, intonation, and fluency. This real-time feedback not only enhances the overall learning experience but also guides learners toward more effective speaking patterns. Likewise, the impact extends beyond the individual learner to collaborative and social aspects. Online communities and forums enable learners to connect with peers, educators, and native speakers globally. Collaborative projects, discussion forums, and virtual language exchanges contribute to

a diverse and immersive language learning experience, fostering and enhancing effective speaking proficiency through interaction and engagement.

In summary, the technological impact on effective speaking proficiency encompasses personalized feedback, accessibility to diverse speaking opportunities, self-paced learning, and collaborative experiences, collectively transforming the way language learners develop their oral communication skills.

2.1.3. Fostering Speaking Proficiency in Digital Language Environments

The enhancement of speaking proficiency within digital language environments represents an essential aspect of contemporary language learning paradigms (Huh & Lee, 2019). As traditional language instruction methods evolve, digital language environments offer a dynamic and immersive platform for learners to enhance their oral communication skills. Unlike conventional settings, digital language environments utilize the power of technology to create interactive spaces that transcend geographical boundaries. In these digital environments, language learners can engage in a variety of activities designed to foster speaking proficiency. Online language courses, interactive modules, and multimedia resources provide learners with diverse content that caters to different linguistic levels and preferences. The gamification of language learning further contributes to an engaging experience, turning speaking practice into an enjoyable pursuit. Platforms such as language learning applications and virtual classrooms integrate gamified elements, encouraging learners to actively participate and enhance their speaking abilities.

Furthermore, enhancing speaking proficiency in digital language environments involves creating opportunities for authentic communication. Virtual language exchange programs, online discussion forums, and collaborative projects enable learners to interact with native speakers and

fellow learners globally. These interactions not only expose learners to diverse linguistic nuances but also encourage the application of language skills in real-life scenarios.

The integration of automatic speech recognition (ASR) technology within digital language environments, as exemplified by language learning applications like Duolingo, enhances the feedback mechanism, providing learners with instant assessments of pronunciation, intonation, and fluency. This real-time feedback mechanism becomes a valuable tool in the fostering process, guiding learners towards more accurate and effective speaking patterns (Huh & Lee, 2019). In essence, the fostering of speaking proficiency in digital language environments capitalizes on the interactive and adaptive nature of technology, creating a versatile and accessible landscape for learners to develop their oral communication skills.

2.2.1 Linguistic Determinants of Technologically Enhanced Speaking Proficiency

Linguistic factors play an essential role in shaping technologically enhanced speaking proficiency (Ghafar et al., 2023). In this context, language-specific elements and features significantly influence learners' ability to effectively communicate in a digital language environment. For instance, phonetic intricacies, syntactic structures, and lexical nuances are key linguistic determinants that impact how learners engage with and benefit from technology-mediated speaking practice. These linguistic factors contribute to the development of accurate pronunciation, grammatical precision, and vocabulary richness, thereby enhancing overall speaking proficiency. In the domain of technology-assisted language learning, linguistic determinants are addressed through innovative approaches that focus on enhancing pronunciation, expanding vocabulary, and promoting grammatical accuracy (Ghafar et al., 2023).

Advanced language learning applications often employ interactive exercises and simulations that specifically target these linguistic elements, providing learners with tailored opportunities to enhance their speaking skills. For instance, language learning applications such as Duolingo employ interactive exercises tailored to enhance pronunciation, allowing learners to practice and improve their accent and intonation. These applications also feature vocabulary-building games and activities that systematically expand learners' lexical reservoirs. Hence, The integration of technology allows for a nuanced investigation of linguistic nuances, which contributes to a more comprehensive development of speaking proficiency.

2.2.2 Socio-Cognitive Influences on Technology-Mediated Oral Proficiency

Socio-cognitive influences significantly shape technology-mediated EFL speaking proficiency (Berenji & Saeidi, 2017). These factors highlight the dynamic interplay between social aspects and cognitive processes in language learning. Collaborative activities in virtual classrooms and online language exchange programs exemplify the impact of socio-cognitive influences on EFL speaking proficiency in technology-mediated settings.

Online discussion forums and community-based platforms provide learners with opportunities to actively participate in discussions, share opinions, and receive feedback from peers and instructors (Berenji & Saeidi, 2017). Engaging in such spaces replicates real-life conversational scenarios and develops crucial socio-cognitive skills, including negotiation of meaning and cultural awareness.

Technology-enhanced language learning incorporates features promoting social engagement and collaboration in the EFL context. For instance, language learning applications may include multiplayer games, virtual group projects, or shared learning spaces where EFL learners

collaborate in real-time. These socio-cognitive elements enrich the EFL learning experience and contribute to effective speaking proficiency development within technology-mediated environments.

2.2.3 Technological Adaptations in Educational Settings for Speaking Proficiency

Technological adaptations in educational settings significantly impact English as a Foreign Language (EFL) speaking proficiency. Integration of technology transforms traditional language learning methods, offering innovative approaches. Interactive language learning applications, such as Duolingo or Babbel, incorporate speech recognition for instant feedback on pronunciation (Cardoso, 2022). Virtual classrooms, using tools such as Zoom or Google Meet, enable authentic speaking interactions and global collaboration (Cardoso, 2022). Adaptive learning platforms, such as Duolingo, personalize exercises based on individual needs (Cardoso, 2022). In essence, these technological adaptations not only facilitate speaking practice but also foster learner autonomy, engagement, and motivation in the language learning process, and create an innovative landscape, enhancing accessibility and effectiveness in EFL speaking practice.

2.3.1 Technological Diversity in Enhancing Oral Proficiency

Technological diversity plays a pivotal role in enhancing English as a Foreign Language (EFL) speaking proficiency. The utilization of various technologies contributes to a rich and multifaceted language learning experience. For example, language learners can utilize diverse language learning applications, such as Babbel or Duolingo, each offering unique features to enhance speaking skills. Virtual reality applications, like VRChat or Engage, provide immersive environments for realistic language practice, allowing learners to interact with virtual scenarios and native speakers (Ahmad, 2016).

Moreover, online language exchange platforms, such as Tandem or HelloTalk, offer opportunities for EFL learners to connect with speakers of the target language worldwide. This diverse technological landscape ensures that learners encounter a range of speaking contexts and engage with different accents, dialects, and communication styles (Ahmad, 2016).

In essence, technological diversity in EFL speaking proficiency incorporates a blend of applications and platforms, providing learners with a comprehensive and adaptable approach to improve their oral communication skills.

2.3.2. Digital Contexts in Language Learning for Oral Proficiency Development

Digital contexts in language learning play a central role in the development of English as a Foreign Language (EFL) speaking proficiency (Huertas-Abril, 2021). These contexts refer to the various online environments and platforms where language learners engage in speaking activities facilitated by technology. Digital language learning applications, such as Duolingo or Babbel, create immersive environments that simulate real-life conversational scenarios. Learners can practice speaking through interactive modules, dialogue simulations, and voice recognition features (Huertas-Abril, 2021).

Moreover, online language exchange programs, forums, and social media platforms provide digital contexts for EFL learners to interact with native speakers and peers. These platforms offer opportunities for authentic communication, enabling learners to apply their speaking skills in real-world situations. The diversity of digital contexts ensures that learners encounter a wide range of language situations, enhancing their adaptability and fluency in different communicative scenarios (Huertas-Abril, 2021). Similarly, digital environments facilitate authentic language practice by

providing access to multimedia resources, such as videos, podcasts, and interactive tutorials, which expose learners to diverse linguistic inputs and cultural contexts.

Virtual reality (VR) and augmented reality (AR) technologies offer immersive language learning experiences where learners can interact with virtual environments and characters. For instance, VR simulations may recreate everyday scenarios like ordering food at a restaurant or navigating a city. By engaging in these simulated interactions, learners develop their speaking skills in context, improving their ability to communicate effectively in real-life situations (Huertas-Abril, 2021).

Furthermore, language learning communities on platforms such as Reddit offer opportunities for peer interaction and feedback. Through group discussions, language exchange events, and speaking challenges, learners can practice speaking skills in a supportive environment, receiving constructive criticism and encouragement from fellow language enthusiasts (Huertas-Abril, 2021).

Finally, social media platforms such as Instagram, Twitter, and TikTok can also be valuable resources for language learners. By following accounts in their target language, participating in language challenges, and creating their own content, learners can practice speaking skills and receive feedback from native speakers in a casual and informal setting (Huertas-Abril, 2021).

In essence, the integration of digital contexts in language learning contributes to the dynamic development of EFL speaking proficiency, offering learners varied and authentic opportunities to practice and refine their oral communication skills.

2.4.1. Investigating Formality in Digital Language Platforms and Its Influence on Speaking Proficiency

Investigating formality in digital language platforms reveals its impact on English as a Foreign Language (EFL) speaking proficiency. Platforms such as Zoom or Google Meet, provide varied levels of formality in communication settings. Learners engaging in formal discussions, virtual presentations, or professional meetings through these platforms encounter scenarios that mirror real-world communicative contexts. The influence of formality in these digital spaces contributes to the nuanced enhancement of speaking proficiency by exposing learners to diverse linguistic registers and promoting adaptability to different communication styles, as noted by Zhang and Liu (2023). This exposure to various communication styles not only enriches learners' language repertoire but also fosters their ability to effectively navigate different social contexts in their language use.

Linguistic registers refer to the various styles, tones, or levels of formality in language that individuals use in different contexts or situations (Zhang & Liu, 2023). These registers are characterized by specific vocabulary, grammar, and expressions that are deemed appropriate for particular social, professional, or communicative settings. For example, the language used in a formal educational meeting would have a different linguistic register than the language used in an informal conversation with friends. Understanding and employing appropriate linguistic registers is essential for effective communication in different situations.

In essence, understanding and navigating formality in digital language platforms play an essential role in enhancing the overall EFL speaking proficiency of language learners. By engaging with different levels of formality, learners develop a comprehensive grasp of language usage across various social contexts, thereby refining their communicative competence. This nuanced

understanding contributes significantly to their ability to express themselves effectively and appropriately in diverse real-life situations, both within and beyond the language learning environment.

2.4.2. Tailoring Technology for Diverse Audiences and Purposes in the Context of Speaking Proficiency

Tailoring technology for diverse audiences and purposes in the context of English as a Foreign Language (EFL) speaking proficiency involves customization to meet the specific needs and goals of learners (Zhou, 2018). Language learning applications, such as Rosetta Stone and Babbel, employ adaptive features that cater to the proficiency levels, interests, and learning styles of diverse EFL audiences. Virtual classrooms, utilizing platforms such as Zoom, facilitate tailored speaking activities by allowing instructors to design content that aligns with the language goals and preferences of their students.

Moreover, adaptive learning platforms like Duolingo utilize machine learning algorithms to analyze learners' speech patterns and tailor exercises for addressing specific areas of improvement as noted by Zhou (2018). This approach ensures that learners receive personalized and targeted speaking practice, enhancing the efficiency of EFL speaking proficiency development. Additionally, online language exchange programs provide a platform for diverse interactions, connecting EFL learners with native speakers worldwide to practice speaking in authentic and culturally rich contexts.

In essence, the tailoring of technology in the context of EFL speaking proficiency acknowledges the diverse backgrounds, goals, and preferences of learners, providing them with personalized and effective language learning experiences.

2.4.3. Language and Style in Technology-Mediated Communication for Enhancing Speaking Proficiency

Within the domain of technology-mediated communication for improving English as a Foreign Language (EFL) speaking proficiency, attention to language and style is important. Digital platforms, ranging from online language exchange forums to virtual classrooms, create unique spaces where learners navigate language intricacies and stylistic elements, as noted by Jaramillo Cherez (2019). These platforms allow learners to engage with native speakers and peers in a variety of contexts, exposing them to different dialects, colloquialisms, and formalities. This exposure is important for developing a versatile and adaptive approach to language use, which enhances their overall speaking proficiency.

Additionally, the interactive nature of these digital spaces encourages active participation and real-time feedback, further contributing to the learners' ability to develop their speaking skills and gain confidence in their language abilities. The consistent practice and immediate corrections available in these settings help learners refine their pronunciation, improve fluency, and expand their vocabulary, all of which are crucial components of speaking proficiency. Through repeated interactions and diverse conversational experiences, learners build the confidence and competence needed to effectively communicate in a wide range of situations.

Effective communication in these digital environments extends beyond mere vocabulary and grammar. Learners encounter varying levels of formality, politeness, and contextual appropriateness as they engage in discussions, video calls, or collaborative projects. Adapting to these nuances enhances the overall speaking proficiency of EFL learners by fostering a deeper understanding of cultural and contextual cues. This adaptability is essential for effective communication in diverse real-world scenarios.

Understanding language and style in technology-mediated communication provides learners with practical exposure to authentic language use. It helps them grasp the appropriate use of expressions, tone, and register in different digital contexts. For instance, a conversation on a language exchange platform may demand a different level of formality compared to a virtual classroom discussion. This exposure not only develops core language skills but also enhances the ability to adapt speaking styles based on audience and purpose. The flexibility gained through navigating formal and informal language in digital communication contributes to a well-rounded and adaptable EFL speaking proficiency.

Embracing informal registers and colloquial expressions fosters authenticity, mirroring natural language use in everyday interactions. Moreover, adapting language and style to suit various digital platforms cultivates adaptability and communicative flexibility. As learners utilize technology-mediated communication to enhance their speaking proficiency, they develop not only linguistic competence but also digital literacy essential for effective communication in contemporary contexts (Jaramillo Cherez, 2019).

In essence, the exploration of language and style in technology-mediated communication enriches the speaking proficiency of EFL learners by immersing them in real-world digital interactions and promoting contextual language use.

2.4.4. Gamification in Speaking Practice

In gamified EFL speaking practice, language learning applications and virtual classrooms incorporate elements such as rewards, points, levels, and challenges (Choi, 2016). These features create a dynamic and goal-oriented environment, motivating learners to actively participate in speaking activities. For instance, applications such as Duolingo may integrate language challenges,

where users earn points or unlock achievements for successfully completing speaking tasks. According to Dr. N. Prathyusha (2020), the role of gamification in language learning extends beyond mere engagement, fostering a deeper immersion in the learning process. By transforming language practice into a game-like experience, learners are more likely to stay motivated, practice regularly, and achieve higher levels of proficiency.

According to Choi (2016), gamification not only adds an element of fun to EFL speaking practice but also provides instant feedback and measurable progress. This implies that learners receive rewards for achieving milestones, creating a sense of accomplishment that encourages continuous engagement. The competitive nature of gamification can also foster a sense of community among learners, as they compete or collaborate to achieve common language-learning goals.

Moreover, gamified EFL speaking practice often incorporates immersive scenarios and role-playing elements (Choi, 2016). Learners engage in simulated conversations, interactive dialogues, or virtual language exchange programs within the gaming environment. This approach enhances the authenticity of speaking tasks, allowing learners to apply language skills in context and develop practical communication abilities.

In essence, gamification in EFL speaking practice capitalizes on the inherent enjoyment and motivation derived from gaming elements, creating an effective and dynamic language-learning experience.

2.5.1. Utilizing Interactive Technologies in Oral Communication Classes

Utilizing interactive technologies is instrumental in fostering English as a Foreign Language (EFL) speaking proficiency by providing dynamic and engaging learning experiences. These

technologies, such as virtual classrooms, language learning applications, and online forums, offer learners opportunities to actively participate in speaking activities. Through interactive exercises, simulated conversations, and real-time feedback, learners can enhance their pronunciation, fluency, and conversational skills (Hafour, 2022). This personalization helps to address specific areas of difficulty and promotes continuous improvement. By integrating interactive technologies into language learning environments, educators can create immersive experiences that motivate learners and enhance their speaking proficiency effectively.

Furthermore, the personalized nature of interactive technologies allows learners to tailor their learning experience to their individual needs and preferences. Learners can choose activities based on their proficiency level, interests, and learning objectives, ensuring that they receive relevant and engaging content that challenges them appropriately (Hafour, 2022).

2.5.2. Fostering Speaking Proficiency in Digital Language Environments

Fostering English as a Foreign Language (EFL) speaking proficiency within digital language environments encompasses diverse strategies to enhance learners' oral communication skills (Huertas-Abril, 2021). Digital language platforms and applications, such as Rosetta Stone and Babbel, create immersive environments where learners engage in various speaking activities. These platforms often feature interactive exercises, voice recognition technology, and simulated conversations, providing learners with dynamic opportunities to practice and refine their speaking skills. In these environments, learners are immersed in dynamic settings where they can practice speaking skills, receive feedback, and engage in authentic interactions with both native speakers and fellow learners.

One key component of fostering speaking proficiency in digital language environments is the use of video conferencing tools. Platforms such as Zoom, Microsoft Teams, and Google Meet allow learners to engage in live, face-to-face conversations with instructors and peers. These tools facilitate real-time interaction, enabling learners to practice speaking in spontaneous, unstructured dialogues similar to natural conversations. This practice helps improve not only linguistic accuracy but also the ability to respond appropriately in various communicative contexts.

Moreover, the collaborative nature of these digital environments promotes a rich and diverse language-learning experience, contributing to the development of effective speaking proficiency (Huertas-Abril, 2021). In addition to facilitating speaking practice, digital language environments offer personalised feedback and assessment tools that help learners track their progress and identify areas for improvement.

Overall, digital language environments offer various collaborative tools that facilitate group work and discussions. Online forums, discussion boards, and collaborative projects in language learning platforms allow learners to practice speaking in group settings, enhancing their ability to articulate ideas, negotiate meaning, and engage in collective problem-solving.

Conclusion

In summary, the integration of technology significantly impacts EFL learners' speaking proficiency, providing personalized feedback, diverse speaking opportunities, self-paced learning, and collaborative experiences. The fostering of speaking proficiency in digital language environments emphasizes the interactive and adaptive nature of technology, creating a versatile and accessible landscape for learners.

Linguistic determinants and socio-cognitive factors contribute to the nuanced understanding of how technology shapes speaking proficiency. Linguistic factors, including phonetic intricacies, syntactic structures, and lexical nuances, play an important role in enhancing pronunciation, grammatical precision, and vocabulary richness. Socio-cognitive influences highlight the dynamic interplay between social aspects and cognitive processes, emphasizing the importance of collaboration and interaction in technology-mediated environments.

Technological adaptations in educational settings impact EFL speaking proficiency, creating innovative landscapes through interactive language learning applications, virtual classrooms, and adaptive learning platforms. Likewise, technological diversity and digital contexts enrich the language learning experience, offering learners a comprehensive and adaptable approach to improve their oral communication skills.

Additionally, investigating formality in digital language platforms and tailoring technology for diverse audiences underscore the need for understanding linguistic registers and adapting to different communication styles. Similarly, exploring language and style in technology-mediated communication immerses learners in real-world digital interactions, promoting contextual language use and adaptability.

Furthermore, gamification in EFL speaking practice introduces elements of fun, motivation, and competition, creating an effective and dynamic language-learning experience. Utilizing interactive technologies and fostering speaking proficiency in digital language environments emphasize the importance of engaging tools and strategies in creating dynamic and effective learning spaces.

Essentially, the evolving landscape of technology in language learning offers a transformative and multifaceted approach to developing EFL speaking proficiency, acknowledging the diverse needs, preferences, and goals of language learners.

Chapter Three :
Analysis and Discussion of
Technology Integration for
Speaking Proficiency

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Introduction

This chapter scrutinizes the research design, population and sample considerations, and the chosen data collection methods, emphasizing the utilization of treatment and statistical analysis, including T-tests for both experimental and control groups. The treatment involves an 8-week intervention where the experimental group uses speech recognition software for pronunciation practice, interactive dialogues, and automated feedback sessions, while the controlled group continues with the standard EFL curriculum without any technological intervention. Pretests and posttests are administered to both groups to measure changes in speaking proficiency, with statistical analysis conducted using SPSS to determine the significance of the findings.

Additionally, structured questionnaires are employed to collect quantitative data regarding students' perspectives on the integration of technology to enhance speaking proficiency. Semi-structured interviews are also conducted with first year selected groups of learners and selected EFL teachers to obtain qualitative insights into the challenges faced and suggestions for improvement. This integrated approach allows for simultaneous investigation of quantitative patterns and qualitative insights. Quantitative data undergoes statistical analysis, and qualitative data are thematically analyzed for context-specific insights.

Moreover, the focus of this chapter lies in the synthesis and discussion of the findings, where the outcomes from the treatment section, students' questionnaires, and teacher interviews are analyzed. This analytical investigation aims to uncover patterns and significant observations related to the integration of technology for enhancing EFL speaking proficiency. Within this framework, the chapter provides a consolidated overview of the findings, acknowledges study limitations, and

offers pedagogical implications and recommendations for future research and instructional practices.

1. Research Design

The research design for "Investigating the Integration of Technology in Enhancing Speaking Proficiency among EFL Learners" is carefully crafted to provide a comprehensive and credible exploration of the research topic. Utilizing a mixed-methods approach, the design incorporates both quantitative and qualitative methods to capture the multifaceted nature of the integration of technology in enhancing speaking proficiency.

In the quantitative phase, participants actively engaging with language learning applications and online resources will be surveyed using a structured questionnaire. It employs Likert-scale questions and closed-ended items to quantify participants' perceptions, attitudes, and preferences regarding the role of technology in enhancing their speaking proficiency. The quantitative data collected will undergo thorough statistical analysis, allowing for the identification of patterns and correlations that contribute statistical validity to the study.

To better understand the effectiveness of integrating technology in enhancing EFL oral proficiency, the researcher incorporates the treatment phase. Participants were divided into experimental and controlled groups. The experimental group underwent an 8-week intervention incorporating speech recognition software as a tool for language learning, engaging in tasks aimed at enhancing speaking proficiency such as pronunciation practice, interactive dialogues, and automated feedback sessions. Meanwhile, the controlled group followed the standard EFL curriculum without technological intervention. Both groups underwent pretest and posttest assessments to evaluate their speaking proficiency before and after the treatment period. Statistical

analyses, including t-tests and Pearson correlation coefficient calculations, were employed to assess the effectiveness of the treatment in enhancing EFL oral proficiency and to analyze any differences between the experimental and controlled groups.

Simultaneously, the qualitative phase involves conducting in-depth semi-structured interviews with five high school teachers. These interviews are designed to investigate deeper into participants' experiences, providing rich insights into the challenges they face and offering valuable suggestions for improving the use of technology in developing speaking proficiency. The interview analysis is conducted using thematic analysis, allowing for the identification of nuanced perspectives and themes that contribute depth and context to the overall findings.

Ethical considerations are integrated at every stage of the research design, emphasizing participant confidentiality, informed consent, and responsible data handling. Adhering to strict ethical standards not only ensures the ethical conduct of the study but also enhances the overall credibility and trustworthiness of the findings.

The mixed methods approach, complemented by ethical considerations, contributes to the validity of the study. Triangulating data from both quantitative and qualitative sources enhances the credibility of the findings, providing a robust foundation for understanding how technology is integrated and its role in enhancing speaking proficiency among EFL learners. This meticulous research design aims to produce findings that are not only statistically valid but also rich in qualitative insights, contributing valuable knowledge to the field of language education.

2. Population

The population for this research comprises high school learners enrolled in First-Year at Dr. Saadane High School of Biskra. The selection of this specific high school and grade level ensures a targeted and relevant sample for investigating the integration and role of technology in enhancing speaking proficiency among EFL learners. The focus on First-Year Secondary School learners aligns with the aim of understanding the role of technology in enhancing speaking proficiency during a critical phase of language development.

The primary participants in this study are the EFL learners from Dr. Saadane High School, serving as the main contributors to the data collection process. These learners were selected as they represent the sample under this investigation, and their experiences with language learning applications and online resources are crucial for obtaining insights into the effectiveness of technology in enhancing speaking proficiency.

Additionally, five teachers, selected based on their expertise in language education, serve as key informants. These teachers bring valuable insights into the pedagogical aspects of technology integration in language learning. Their perspectives, gained from their role as language educators, will provide a nuanced understanding of the challenges and opportunities associated with utilizing technology for speaking proficiency development.

To ensure a comprehensive investigation, a random sample of two groups of EFL learners were selected from the identified population. The randomness of the sample enhances the generalizability of the findings to the larger population, increasing the external validity of the study. This systematic approach to sampling aims to capture a diverse range of perspectives and

experiences within the specified high school and grade level, contributing to the credibility and reliability of the research outcomes.

3. Sample of the Study

A total of 80 learners from the first year of secondary school participated in this study. The participants were divided into two groups: a control group and an experimental group, each consisting of 40 learners. Among these participants, there were 20 female learners and 20 male learners in each group. The controlled group included 20 female and 20 male students, while the experimental group also included 20 female and 20 male students.

4. Data Collection

To address the research objectives, test the hypotheses, and answer the research questions, a mixed methods approach involving both quantitative and qualitative data collection methods is employed. A structured survey is administered to EFL learners, focusing on their active engagement with technology in the language learning process. The survey includes Likert-scale questions and closed-ended items designed to capture quantitative insights into participants' perceptions of the impact of technology on their speaking proficiency. The structured survey aims to quantify the extent of technology integration and its correlation with enhanced speaking proficiency.

To complement the quantitative data collection, a treatment phase is implemented. Semi-structured interviews are conducted with five teachers to gain deeper insights into their experiences, challenges, and suggestions regarding the integration of technology for speaking proficiency development. This qualitative approach offers rich, contextualized perspectives on the

multifaceted aspects of technology integration in language learning, providing valuable supplementary insights to the quantitative findings.

The data collection tools include a questionnaire consisting of Likert-scale questions and closed-ended items, focusing on participants' perceptions of the impact of technology on speaking proficiency, and semi-structured interviews conducted with a subset of EFL learners, designed to investigate experiences, challenges, and suggestions related to technology use in speaking proficiency development. The data collected undergoes thorough statistical analysis to test the research hypotheses, involving statistical tests to determine the significance of the relationship between active engagement with technology and enhanced speaking proficiency among EFL learners.

Overall, the combined use of quantitative and qualitative data collection methods and tools aims to provide a comprehensive understanding of the integration and role of technology in enhancing speaking proficiency among EFL learners, as outlined in the research hypotheses.

5. Treatment Section

5.1.2 Procedure

1. **Pretest:** Before the intervention, both groups underwent a pretest to assess their baseline speaking proficiency. The pretest consisted of a standardized speaking assessment that evaluated pronunciation, fluency, and overall communicative competence (see appendix A).
2. **Treatment:** Over a period of 8 weeks, the experimental group used speech recognition software as part of their language learning activities. They engaged in various tasks

designed to improve their speaking skills, including pronunciation practice, interactive dialogues, and automated feedback sessions (See appendix B). The control group continued with the standard EFL curriculum without any technological intervention.

3. **Posttest:** After the 8-week period, both groups took a posttest identical to the pretest to measure any changes in their speaking proficiency (See appendix C).

5.1.3 Pretest and Posttest Administration

Pretest: The pretest was administered to both the control and experimental groups before the intervention. The pretest included questions designed to assess the students' speaking proficiency, focusing on pronunciation accuracy, fluency, and overall speaking competence.

Posttest: After the eight-week intervention period, during which the experimental group used the speech recognition software, the posttest was administered to both groups to evaluate any improvements in speaking proficiency.

- Experimental Group (n = 40): This group received the treatment involving the use of speech recognition software as a tool for enhancing speaking proficiency.
- Control Group (n = 40): This group followed the traditional language learning curriculum without the integration of speech recognition technology.

Table of Students' Scores (See appendix F)

5.1.4 Findings from the experimentation

To answer the research questions and test the validity of the hypotheses (null and alternative), inferential and analytical statistical methods were used. The data was coded and entered into the

computer using the Statistical Package for Social Sciences (SPSS) version 24. SPSS was utilized because it is specifically designed to handle numerical and nominal data. The following statistical methods were used:

1. Frequencies and percentages: To calculate the characteristics of the learners in the study sample.
2. Means and standard deviations: To answer the research questions.
3. T-test: To detect differences between the means of two samples and test hypotheses.
4. Pearson correlation coefficient: To test hypotheses (skewness).

5.1.5 Statistical Analysis

Section One: Analysis of the Treatment

In order to get to know and analyze the responses of the learners, we are exposed to it as follows:

Part 1: Responses of individuals in the sample for the **Experimental pretest group**. The distribution of the study sample's responses according to this characteristic is as follows:

Table 3.1

Distribution of sample responses according to the scores of the experimental group *pre- test*

Number	Variable	Test scores	frequency	Percentage%
1	Pre- test scores of the experimental group	9	10	25.0
		10	14	35.0
		11	10	25.0

		12	6	15.0
Total			40	100

The above table illustrates the distribution of learners in the sample according to the characteristic of pre-test scores for the *experimental group*. It reveals that 10 individuals, representing 25% of the study sample, had pre-test scores of 9. Fourteen individuals, representing 35% of the study sample, had pre-test scores of 10. In contrast, 10 individuals, representing 25%, had pre-test scores of 11. Additionally, 6 individuals, representing 15%, had pre-test scores of 12.

Section Two: Responses of learners in the sample of the *post- test (Experimental group)* The distribution of responses of the study sample according to this characteristic is as follows:"

Table 3.2

Distribution of responses of the sample according to the post- test scores of the Experimental group

Number	Variable	Test scores	frequency	Percentage%
2	Post test of the Experimental group	13	10	25.0
		14	14	35.0
		15	10	25.0
		16	6	15.0
Total			40	100

The results from the above table show the distribution of individuals in the sample according to post-test scores. It reveals that 10 individuals, representing 25% of the study sample, had post-test scores of 13. Fourteen individuals, representing 35% of the study sample, had post-test scores of 14. In contrast, 10 individuals, representing 25%, had post-test scores of 15. Additionally, 6 individuals, representing 15%, had post-test scores of 16.

Section Three: Responses of individuals in the sample for the Control group. The distribution of responses of the study sample according to this characteristic is as follows:

Table 3.3

Distribution of responses of the sample according to the **pre-test scores of the control group before treatment**

Number	Variable	Test scores	frequency	Percentage%
3	Pre- test for the control group	9	10	25.0
		10	16	40.0
		11	10	25.0
		12	4	10.0
Total			40	100

Results show the distribution of individuals according to the pre-test scores of the control group. The table reveals that there are 10 individuals, representing 25% of the study sample, with pre-test scores of 9. Sixteen individuals, representing 40% of the study sample, had pre-test scores of 10.

In contrast, 10 individuals, representing 25%, had pre-test scores of 11. Additionally, there are 4 individuals, representing 10%, with pre-test scores of 12.

Section Four: Responses of individuals in the sample for the controlled group without treatment.

The distribution of responses of the study sample according to this characteristic is as follows:

Table 3.4

Distribution of responses of the sample according to the Post-test scores of the controlled group without treatment

Number	Variable	Test scores	frequency	Percentage%
4	Post- test scores for the controlled group	<i>10</i>	<i>10</i>	<i>25.0</i>
		<i>11</i>	<i>16</i>	<i>40.0</i>
		<i>13</i>	<i>10</i>	<i>25.0</i>
		<i>13</i>	<i>4</i>	<i>10.0</i>
Total			40	100

Results from the above table display the distribution of individuals in the sample according to their post-test scores. It reveals that 10 individuals (25%) scored 10, 16 individuals (40%) scored 11, 10 individuals (25%) scored 13, and 4 individuals (10%) scored 14.

Section Five: Answering the Hypotheses

Table 3.5**Means and Standard Deviations of Scores of the Experimental Group**

Scores of the Experimental Group	Mean	standard deviation (SD)
Pre-test	10.30	1.018
Post- test	14.30	1.018

The above table shows the *means* and *standard deviations* of scores in the experimental group; it is evident that there is a *clear difference* between *the pre-test* and *post- test scores*. The highest mean is in favor of the post- test scores, indicating *a positive effect* of the treatment applied to the experimental group.

Table 3.6**Means And Standard Deviations of Scores for the controlled Group**

Scores of the controlled Group	Mean	standard deviation (SD)
Pre-test	10.20	0.939
Post- test	11.20	0.939

Based on **Table 3.6** showing the means and standard deviations of scores for the controlled group, it is evident that there is no significant difference between the pre- and post- test scores for

the controlled group without the treatment. This indicates that there is minor difference in the test scores before and after the pre and post- tests.

Table 3.7**Significance Levels for Sample Scores in the Experimental and Controlled Groups**

Experimental Group		Controlled Group		Method used	T value	significance level	Result
Mean	SD	Mean	SD	t. test	14.274	0.000	significant at 0.05
24.60	2.036	21.40	1.878				

Results obtained from the above table reveal that the significance level (Sig) value is 0.000, which is smaller than the significance level of 0.05. Therefore, we can conclude that there is a statistically significant difference at a significance level ($\alpha=0.05$) between the scores in the experimental group and the scores in the controlled group, in favor of experimental ones.

Table 3.8**Significance Level Values for Scores of Sample Individuals in the experimental group by Gender**

Variable	Method Used	Significance Level (sig)	Results
Gender	t- test	1.000	Not significant

The above table reveals that the significance value (Sig) is 1.000, which is greater than the significance level of 0.05. Therefore, we can conclude that there are no statistically significant differences at the significance level ($\alpha=0.05$) in the scores of the experimental group based on the gender variable.

Table 3.9

Pearson's correlation coefficient between the scores of *pre- test* and *post – test* of the experimental group.

	Pearson's correlation	degrees of freedom	p-value	significance level
Pre-test	1.000	38	0.000	significant at the 0.01
Post- test				

Results clearly indicate the presence of a statistically significant correlation between the scores of the experimental group in the pre- test and post- test. The p-value of 0.000, which is smaller than the significance level of 0.01, confirms the existence of a statistically significant correlation between the pre-test and post-test scores.

Table 3.10

Pearson's correlation coefficient between the scores of **controlled group**

	Pearson's correlation	degrees of freedom	p-value	significance level
Pre-test	1.000	38	0.000	Significant at 0.01
Post- test				

The above Table clearly indicates the presence of a statistically significant correlation between the scores of the controlled group. The p-value of 0.000, which is smaller than the significance level of 0.01, confirms the existence of a statistically significant correlation between the pre-test and post-test scores.

Table 3.11

Pearson's correlation coefficient between the scores of *Experimental and controlled groups*

	Pearson's correlation	The degree of freedom	p- value	Significance level
Experimental group	0.740	38	0.000	Significant at 0.01
Controlled group				

The above table clearly indicates the presence of a statistically significant correlation between the scores of the experimental and the controlled groups. The p-value of 0.000, which is smaller than the significance level of 0.01, confirms the existence of a statistically significant correlation between the scores of the two groups.

Table 3.12

Significance Level Values for Sample Individuals' Scores on the Pre- Test for the experimental Group and the Pre- Test for controlled group

pre-treatment test for the experimental group		pre- test for the controlled group		The Method Used	T value	Significance level	Results
Mean	SD	Mean	SD	T test	0.892	0.378	Not significant
10.30	1.018	10.20	0.939				

Based on the above table, the significance value (Sig) is 0.378, which is greater than the significance level of 0.05. Therefore, at a significance level ($\alpha=0.05$), we can conclude that there is no statistically significant difference between the pre-treatment test scores for experimental group and the pre- test scores for the controlled.

Table 3.13

Significance Levels for Sample Individuals' Scores in the Post- Test for the experimental group and the Non-Treatment Test for the controlled group

pre-treatment test for the experimental group		pre- test for the controlled group		The Method Used	T value	Significance level	Results
Mean	SD	Mean	SD	T test	27.656	0.000	Significant at 0.05
14.30	1.018	11.20	0.939				

Results reveal that the significance value (Sig) is 0.000, which is smaller than the significance level of 0.05. Therefore, at a significance level ($\alpha=0.05$), we can conclude that there is a statistically significant difference between the post- test scores for the experimental group and the non-treatment test scores for the controlled group, in favor of the post- test scores for the experimental group.

Discussion

In the final analysis, this investigation fails to accept the null hypothesis and tends necessarily to accept the alternative hypothesis. The statistical methods employed, including frequencies, percentages, means, standard deviations, t-tests, and Pearson correlation coefficients, consistently indicate a significant difference between the pre-test and post-test scores of the experimental group, while the controlled group showed no such improvement. The treatment applied to the experimental group significantly increased their post-test scores, as evidenced by the substantial rise in means and the strong positive correlation between pre- and post-test scores. Additionally, no significant differences based on gender were observed in either group, further reinforcing the reliability of the treatment's effectiveness. Thus, the findings confirm the efficacy of the treatment in enhancing the performance of the experimental group, validating the alternative hypothesis.

3.1. Questionnaire for the students

3.1.1. Description of the Students' Questionnaire

The questionnaire, tailored for First-Year Secondary School English as a Foreign Language (EFL) learners, is a comprehensive tool designed to gather insights into the participants' perceptions and experiences regarding technology integration in the language learning process. Divided into two sections, the questionnaire addresses key aspects related to active engagement with technology and its impact on speaking proficiency development.

Section One: Students' Perceptions of the Integration of Technology in Enhancing Speaking Proficiency

This section consists of six questions aimed at investigating students' perspectives on the integration of technology in enhancing their speaking proficiency. It explores their beliefs

regarding the contribution of technology to speaking proficiency development, the frequency of technology use for speaking practice outside the classroom, types of technology used (including language learning applications and online resources), their confidence in the effectiveness of technology for improving speaking skills, and the challenges they encounter when utilizing technology for speaking proficiency development. Through a series of questions and data analysis, this section aims to provide insights about the attitudes of the students, behaviors, and perceived barriers related to technology integration in language learning.

Section Two: Evaluating Speaking Proficiency Enhancement

This segment of the research study is dedicated to assessing the tangible impacts of technology on speaking proficiency among English as a Foreign Language (EFL) learners. Through five carefully crafted questions, participants are prompted to evaluate their own speaking proficiency and the extent to which technology has contributed to its enhancement. The questions cover various dimensions, including participants' self-assessment of speaking confidence, fluency, and perceived improvement in spoken English resulting from technology integration. Additionally, participants are asked to reflect on specific features or tools within technology, such as speech recognition software or language learning applications, that have notably influenced their speaking proficiency development. By exploring these aspects, the research aims to gain comprehensive insights into the actual impacts of technology on speaking proficiency among EFL learners, complementing the perceptions investigated in the preceding section.

3.1.2. Validity of the Questionnaire

The validity of the Students' Questionnaire, an essential element in ensuring the reliability of gathered data, is systematically assessed prior to its administration. To enhance the validity of the

questionnaire, it was submitted to the supervisor for examination. The supervisor evaluated various aspects, including the level of difficulty, clarity of content, and identification of any repeated or ambiguous questions.

This pre-administration examination by the supervisor aimed to identify and rectify any potential issues that might compromise the validity of the instrument. Feedback received during this process facilitated refinements to ensure that the questionnaire effectively measured what it intended to assess. By addressing concerns related to question clarity, potential bias, and comprehension difficulties, the validity of the instrument was supported, contributing to the strength of the data collected.

3.1.3. Administration of the Questionnaire

The questionnaire, carefully designed to align with the objectives of the study, was administered to the target sample of First-Year Secondary School English as a Foreign Language (EFL) learners. Prior to distribution, the questionnaire underwent a comprehensive design phase, ensuring clarity, relevance, and linguistic appropriateness. It was then submitted to the supervisor for examination, evaluating the level of difficulty, content clarity, and identification of any repeated or ambiguous questions. After necessary adjustments, the finalized questionnaire was distributed to the selected First-Year Secondary School learners. Clear instructions were provided to ensure uniform understanding and completion of the questionnaire, fostering a standardized approach across the target sample. The administration process aimed to minimize any potential sources of bias and maintain the reliability and validity of the collected data.

3.1.4. Analysis of Students' Questionnaire

The questionnaire administered to First-Year Secondary School EFL learners consisted of two sections. Section one contains seven questions and section two contains nine questions. These questions were thoughtfully designed to gauge students' perceptions of the impact of technology on their speaking proficiency. Participants were required to rate their responses on a Likert scale, providing a structured format for quantitative analysis. The Likert scale ranged from strongly disagree to strongly agree, allowing for a nuanced understanding of participants' attitudes.

The analysis involved the generation of 16 figures, corresponding to each question in the questionnaire. These figures took the form of pie charts and other graphical representations, offering a visual interpretation of the distribution of responses. Each figure was thoroughly crafted to highlight the percentage distribution of participants' ratings for each Likert scale option.

The detailed analysis of the questionnaire responses aimed to uncover patterns, trends, and variations in students' perceptions regarding the role of technology in enhancing their speaking proficiency. This quantitative approach, supported by visual representations, provided a strong foundation for drawing meaningful insights from the students' perspective. The analysis process underwent examination to ensure accuracy and reliability in interpreting the data, contributing to the overall credibility of the study.

Section One: Students' Perceptions of the Integration of Technology in Enhancing Speaking Proficiency

Item 01: How much do you agree with the statement: "Technology positively contributes to the development of my speaking proficiency"?

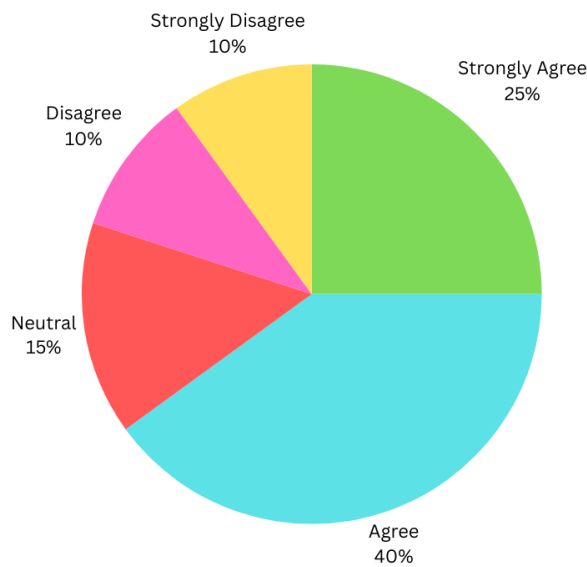


Figure 1: Distribution of Students' Perspectives on the Contribution of Technology to Speaking Proficiency

Figure 1 displays the distribution of students' perspectives regarding the contribution of technology to their speaking proficiency development. The majority of respondents (65%) express positive views, with 25% strongly believing that technology is important and 40% agreeing that technology enhances their speaking skills. A smaller portion (15%) remains neutral on the topic, neither agreeing nor disagreeing about the role of technology. Conversely, a combined 20% of respondents hold negative views, with 10% not thinking technology contributes much and another 10% strongly disagreeing with the positive impact of technology on speaking proficiency.

This breakdown illustrates an overall positive perception among the students toward the role of technology in improving their speaking abilities. The reasons behind these attitudes could be multifaceted. Students who view technology positively might have experienced tangible improvements in their speaking skills through the use of language learning applications, online

courses, and interactive speaking exercises. They may find these tools to be accessible, engaging, and effective in providing real-time feedback and practice opportunities. On the other hand, those who are neutral or negative might have encountered limitations or challenges with technology, such as technical issues, lack of personalized feedback, or insufficient interaction with native speakers, leading to a less favorable perception of its impact on their speaking proficiency.

Item 2: How often do you use technology, such as language learning applications or online resources, to practice speaking English outside of the classroom environment?

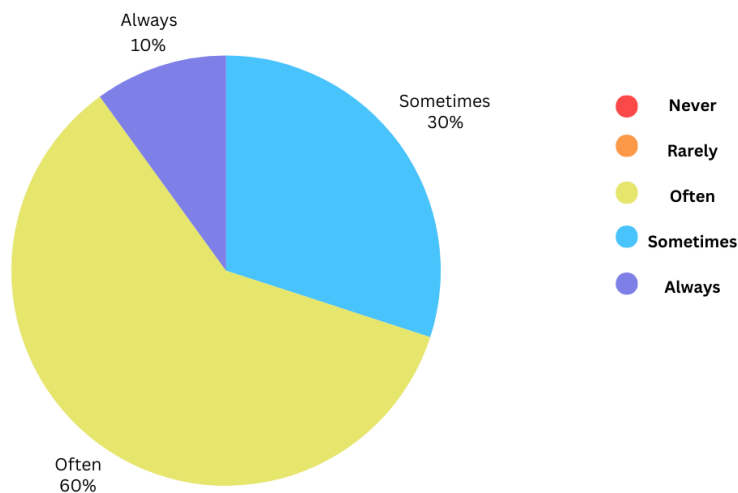


Figure 2: Frequency of Technology Use for Speaking Practice

This pie chart illustrates the distribution of responses among students regarding the frequency of using technology, such as language learning applications or online resources, to practice speaking English outside of the classroom. After analyzing the data, it becomes evident that a

significant portion of students (60%) reported using technology often for speaking practice. Another substantial portion reported using it sometimes (30%), while a smaller percentage reported using it always (10%). Interestingly, none of the respondents reported using technology rarely.

This data reflects varying levels of engagement with technology for speaking practice among the student population. The high frequency of technology use for speaking practice can be attributed to several factors. Firstly, the availability of material plays a crucial role. With a variety of accessible and diverse language learning applications, online resources, and platforms providing interactive speaking exercises, students find it convenient and effective to incorporate technology into their practice routines.

Secondly, students' motivation is a significant factor. Those who are motivated to improve their speaking skills may seek out technological tools that offer personalized feedback, engaging content, and opportunities for real-time interaction with native speakers, all of which contribute to their regular use of technology.

Thirdly, teacher demands and encouragement could also influence the frequency of technology use. Teachers who integrate technology into their curriculum and encourage students to use digital tools for practice outside the classroom can positively impact students' attitudes and habits regarding technology use.

In summary, the high frequency of technology use for speaking practice among students is likely due to the wide availability of engaging and effective learning materials, students' intrinsic

motivation to improve their speaking skills, and the supportive role of teachers in promoting technology integration in language learning.

Item 03: Do you believe technology can effectively enhance your speaking proficiency in English?

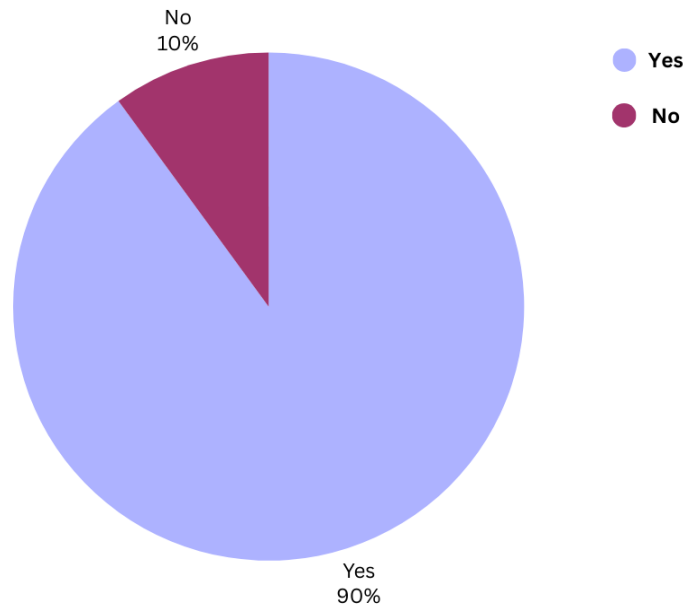


Figure 3: Students' Belief in the Effectiveness of Technology for Enhancing Speaking Proficiency.

This pie chart represents students' perceptions regarding the efficacy of technology in enhancing their speaking proficiency. The data shows that 90% of students express confidence in the effectiveness of technology for improving their English speaking skills, while the remaining 10% do not share this belief. This distribution suggests a generally positive perspective among the majority of students towards technology integration in language learning.

The high level of confidence can be attributed to several factors. Many students likely benefit from the diverse functionalities offered by language learning technologies, such as interactive speaking exercises, pronunciation guides, and speech recognition software that helps improve their fluency and accuracy. Additionally, technologies often provide flexible learning schedules and the ability to practice speaking in a variety of simulated real-life scenarios, which are invaluable for language acquisition.

However, the presence of a minority (10%) who do not believe in the effectiveness of technology may be due to various factors. Some students might have had negative experiences with specific technology tools, encountering technical issues, or finding the content unengaging or not tailored to their learning style. Others might prefer traditional face-to-face learning environments where they can receive immediate, personal feedback from teachers.

Addressing the concerns of this subset of students is crucial. Understanding the specific barriers they perceive can help educators and developers improve the design and implementation of technology-enhanced language learning initiatives, ensuring they cater to the diverse needs and preferences of all EFL learners. This could involve providing better support for using technology, offering more personalized learning experiences, and integrating technology with traditional teaching methods to create a more balanced and holistic approach.

Item 4: What difficulties do you encounter as an EFL learner in utilizing technology to improve your speaking proficiency?

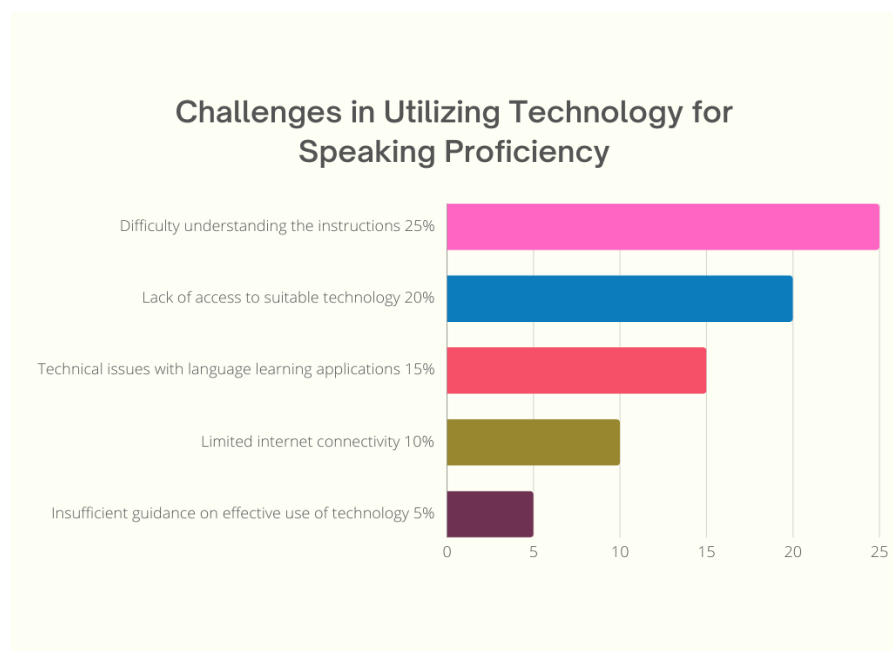


Figure 4: Challenges in Utilizing Technology for Speaking Proficiency

Figure 4 illustrates the diverse challenges encountered by EFL learners when utilizing technology to enhance speaking proficiency. A bar chart was used to present this data to clearly show the distribution of different challenges across a large group of respondents. The bar chart's format allows for easy comparison of the frequency of each reported challenge, making it an effective tool for highlighting the multifaceted nature of the issues faced by learners.

Among these challenges, 25% of respondents expressed difficulty in understanding the instructions provided, indicating potential issues with clarity or language barriers within the technology platforms. Additionally, 20% mentioned a lack of access to suitable technology, highlighting disparities in resource availability that may hinder effective engagement with language learning applications. Technical issues with language learning applications were reported by 15% of respondents, suggesting potential usability or functionality issues that impede learning progress. Limited internet connectivity emerged as a concern for 10% of participants, underscoring

infrastructure limitations that affect consistent access to online resources. Furthermore, 20% of respondents indicated a lack of sufficient guidance on the effective use of technology, emphasizing the importance of comprehensive support mechanisms for learners navigating digital learning environments.

These findings underscore the multifaceted nature of challenges faced by EFL learners in utilizing technology for speaking proficiency development. The varied nature of these challenges suggests that a one-size-fits-all approach is inadequate. Instead, tailored interventions are required to address each aspect effectively. For instance, improving the clarity of instructional content could involve the use of simpler language or multilingual support. Addressing the lack of access to suitable technology might require providing resources or subsidies to ensure all learners have the necessary tools. Resolving technical issues may involve working closely with software developers to improve usability and functionality, while enhancing internet connectivity could be tackled through infrastructure development or offering offline learning options. Finally, providing sufficient guidance on the effective use of technology could involve comprehensive training programs for both students and teachers. Each of these interventions must be strategically designed to target the specific challenges identified, ensuring a holistic approach to enhancing EFL learners' speaking proficiency through technology.

Item 5: Which language learning applications and online resources have you utilized to practice speaking English outside the classroom environment?

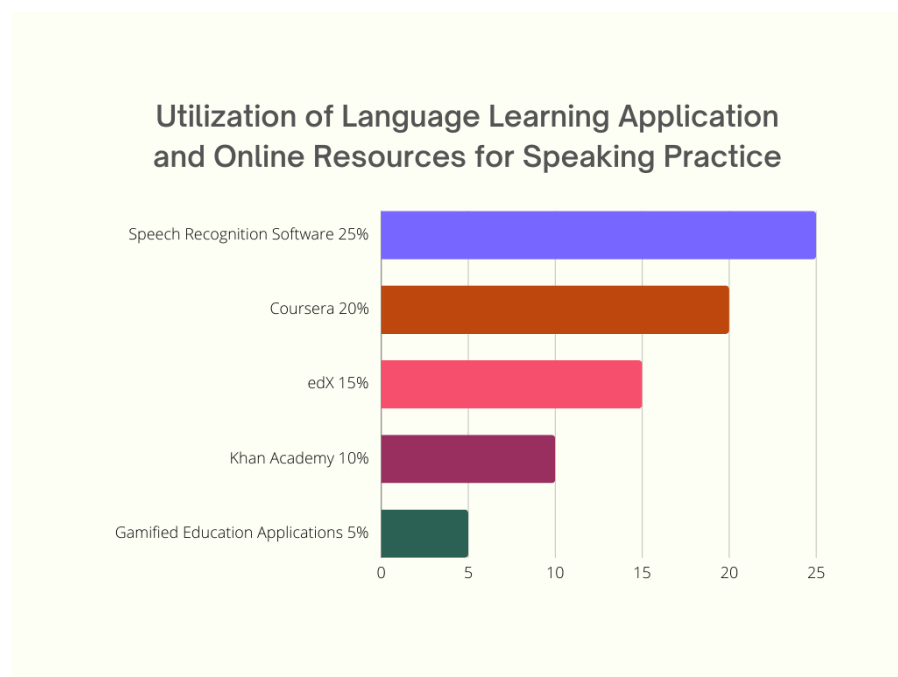


Figure 5: Utilization of Language Learning Applications and Online Resources for Speaking Practice

Figure 5 illustrates the distribution of participants' utilization of language learning applications and online resources for practicing speaking English outside the classroom. Speech recognition software emerges as the most utilized resource, with 25% of participants reporting its use. This popularity can be attributed to its advanced technology, which provides immediate analysis of pronunciation and intonation, giving learners precise insights for improvement. Coursera follows closely with 20% utilization, offering a wide range of language learning modules that include interactive speaking exercises, video lessons, and peer-reviewed assignments, catering to various learning preferences.

Khan Academy, with 15% utilization, supports learners through comprehensive grammar tutorials and speaking practice exercises, enhancing their overall language proficiency by

reinforcing foundational skills. Babbel and Duolingo, each representing 10% utilization, are well-known for their user-friendly interfaces, gamified learning experiences, and personalized lesson plans, making language learning engaging and accessible. These platforms offer structured paths to practice speaking, which helps learners build confidence and fluency incrementally.

Furthermore, gamified educational applications, utilized by 5% of participants, present interactive challenges and rewards that foster motivation and retention. The engaging nature of these apps encourages consistent practice, which is crucial for developing speaking proficiency.

This distribution reflects varied preferences influenced by factors such as accessibility, effectiveness, and personal learning style. The emphasis on different resources underscores the importance of providing diverse and adaptable tools to support language acquisition endeavors. Effective speaking proficiency development hinges on regular practice, feedback on performance, and exposure to various linguistic contexts, all of which are facilitated by the diverse applications and resources mentioned. By utilizing a combination of these tools, learners can address multiple aspects of speaking proficiency, including fluency, accuracy, pronunciation, and the ability to engage in spontaneous conversation.

Item 6: How do you perceive the effectiveness of technology in improving your speaking proficiency as an EFL learner?

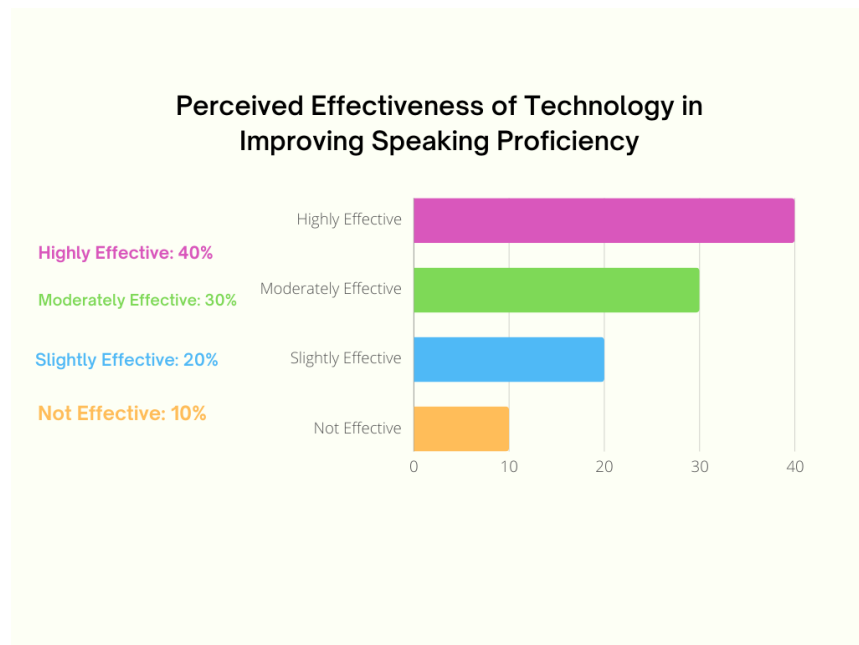


Figure 6: Perceived Effectiveness of Technology in Improving Speaking Proficiency

The stacked bar graph representing the learners' perceptions of the effectiveness of technology in improving speaking proficiency illustrates several key insights. Firstly, a significant portion of respondents, comprising 40%, perceived technology as highly effective in enhancing their speaking skills. This indicates a strong belief among a considerable proportion of EFL learners that technology plays a crucial role in their language development.

Additionally, 30% of respondents viewed technology as moderately effective, suggesting a positive perspective towards its impact on speaking proficiency. This group acknowledges the value of technology but may have some uncertainties for improvement in its effectiveness.

Moreover, 20% of respondents perceived technology as slightly effective, indicating that while they recognize its potential benefits, they may have encountered limitations or challenges in fully utilizing its capabilities for speaking proficiency development.

Finally, 10% of respondents reported that technology was not effective in improving their speaking proficiency. This minority group expresses dissatisfaction about the efficacy of technology in language learning, suggesting a need for tailored interventions or further support to address their concerns and enhance their engagement with technology-enhanced learning approaches.

Item 7: Which mobile applications do you use to enhance your speaking proficiency in the target language?

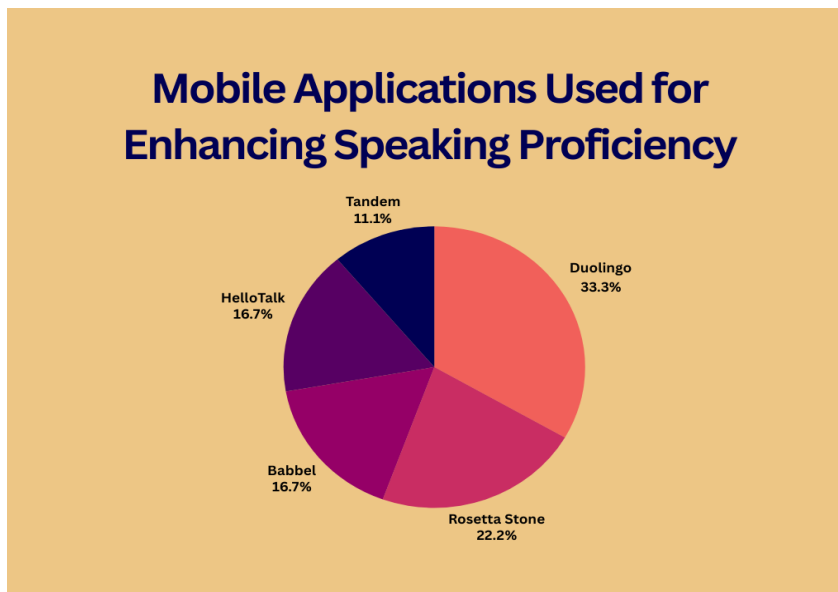


Figure 7: Mobile Applications Used for Enhancing Speaking Proficiency

The pie chart represents the distribution of mobile applications used by respondents to enhance their speaking proficiency in the target language. Duolingo emerges as the most popular choice among respondents, with 30% of participants utilizing the app for speaking practice. Duolingo's popularity can be attributed to its user-friendly interface and gamified learning environment, which makes language practice engaging and enjoyable. The app offers a variety of interactive exercises

and speaking challenges that help learners develop their speaking skills in a structured yet fun way. Its widespread accessibility and comprehensive coverage of multiple languages also contribute to its high usage rate.

Rosetta Stone follows closely behind, with 20% of respondents using the app for speaking proficiency enhancement. Rosetta Stone is well-regarded for its immersive language learning experiences. It employs a combination of interactive lessons and advanced speech recognition technology to help learners fine-tune their pronunciation and conversational abilities. The app's emphasis on immersive, context-based learning allows users to practice speaking in realistic scenarios, which is crucial for developing fluency.

Babbel is utilized by 15% of respondents for speaking practice. Babbel's appeal lies in its personalized lessons and speaking exercises tailored to learners' proficiency levels and learning objectives. The app's focus on practical, real-world conversations helps users build relevant vocabulary and improve their ability to communicate effectively in various situations. Babbel's structured lessons also provide a clear progression path, helping learners to steadily improve their speaking skills.

HelloTalk also accounts for 15% of respondents, offering a unique platform for language exchange and conversation practice with native speakers around the world. This app enables learners to engage in real-time conversations with native speakers, which significantly enhances their speaking proficiency through practical use and cultural exchange. HelloTalk's community-based approach fosters a supportive learning environment where users can receive instant feedback and tips from native speakers.

Tandem is used by 10% of respondents, providing another robust platform for language exchange and conversation practice through text, voice messages, and video calls. Tandem's strength lies in its flexibility and the personalized matching system that connects learners with native speakers based on their learning goals and interests. This allows for meaningful and productive language practice, enhancing both speaking fluency and cultural understanding.

Overall, the diverse range of mobile applications utilized by respondents highlights the importance of interactive, personalized, and immersive learning experiences in enhancing speaking proficiency. Each app offers unique features that cater to different aspects of language learning, from structured exercises and real-time feedback to community engagement and cultural exchange. These varied tools collectively support EFL learners in developing their speaking skills more effectively.

Section Two: Evaluating Speaking Proficiency Enhancement

Item 8: Reflecting on your experience with technology integration, what specific improvements have you observed in your speaking proficiency as an English as a Foreign Language (EFL) learner?

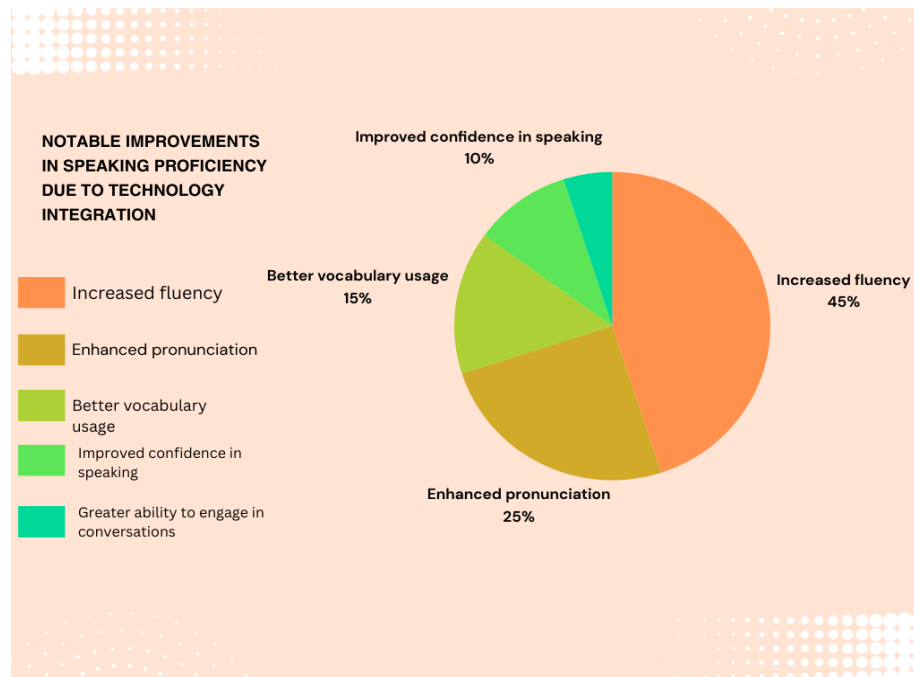


Figure 8: Notable Improvements in Speaking Proficiency Due to Technology Integration

The pie chart illustrates the responses of EFL learners regarding the impact of technology on their speaking proficiency. The majority of respondents (45%) reported increased fluency, attributed to regular practice using language learning applications and speech recognition software, which provide opportunities for repeated speaking exercises and immediate feedback, which are essential for developing fluency through consistent practice. Additionally, 25% noted enhanced pronunciation, possibly facilitated by real-time feedback from technology tools, aiding learners in identifying and correcting pronunciation errors. Some learners (15%) mentioned better vocabulary usage, indicating the effectiveness of interactive learning activities and vocabulary-building features offered by language learning applications. A smaller percentage (10%) reported improved confidence in speaking, likely due to personalized learning experiences tailored to individual proficiency levels, boosting learners' self-assurance. Lastly, 5% cited a greater ability to engage in conversations, reflecting the interactive nature of technology-enhanced language learning, which

encourages communication through simulated dialogues and role-playing scenarios. These findings underscore the multifaceted benefits of technology integration in enhancing various aspects of speaking proficiency among EFL learners.

Item 9: What specific features or tools within technology do you believe have contributed the most to enhancing your speaking proficiency?

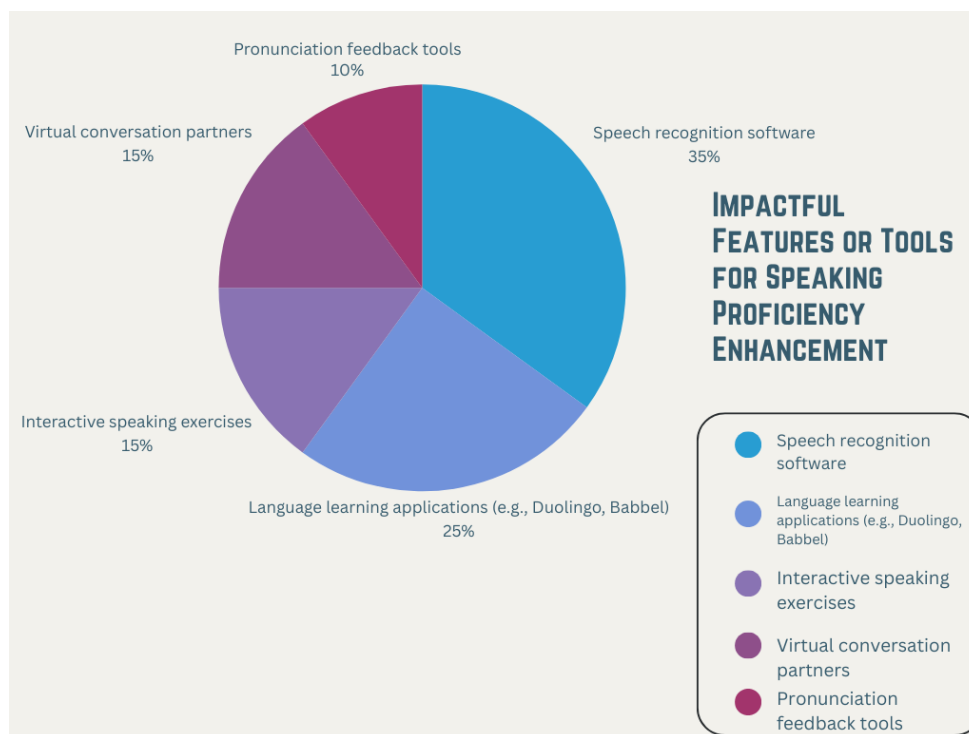


Figure 9: Impactful Features or Tools for Speaking Proficiency Enhancement

This pie chart illustrates the perceived impact of various technological features or tools on enhancing speaking proficiency among EFL learners. The data reveal that speech recognition software is widely regarded as the most influential tool, with 35% of respondents attributing significant improvement in their speaking skills to its use. This high percentage likely reflects the effectiveness of speech recognition software in providing instant analysis and correction of

pronunciation and intonation. Such tools offer structured, interactive practice sessions that help learners refine their articulation, build fluency, and gain confidence in their speaking abilities. By simulating real-world conversations, speech recognition software enables learners to practice speaking in context, which is essential for developing conversational skills and natural language use. The immediate insights provided by these tools allow learners to correct mistakes on the spot, reinforcing proper pronunciation and intonation patterns. This targeted practice is crucial for mastering the nuances of spoken language, including stress, rhythm, and intonation, which are vital components of effective communication.

Following closely behind, language learning applications such as Duolingo and Babbel gathered 25% of the responses. These applications offer immersive speaking exercises, gamified activities, and personalized feedback, making them valuable resources for learners seeking to enhance their speaking proficiency in an engaging and accessible way. Interactive speaking exercises and virtual conversation partners each received 15% of the responses, indicating their importance in providing authentic speaking practice and facilitating meaningful interaction with language content. Learners may appreciate the opportunity to engage in simulated conversations or collaborative activities, which can contribute to fluency and confidence in speaking. Lastly, pronunciation feedback tools, although less commonly acknowledged at 10%, are still recognized for their role in enhancing pronunciation accuracy and addressing specific linguistic challenges. These tools help learners to fine-tune their accent and clarity, which are critical components of effective spoken communication.

Overall, the distribution of responses underscores the diverse range of technological tools and features available to support speaking proficiency development, highlighting the importance of incorporating a variety of resources to cater to the diverse needs and preferences of EFL learners.

Item 10: How confident are you in your ability to engage in conversations in English after integrating technology into your language learning practices?

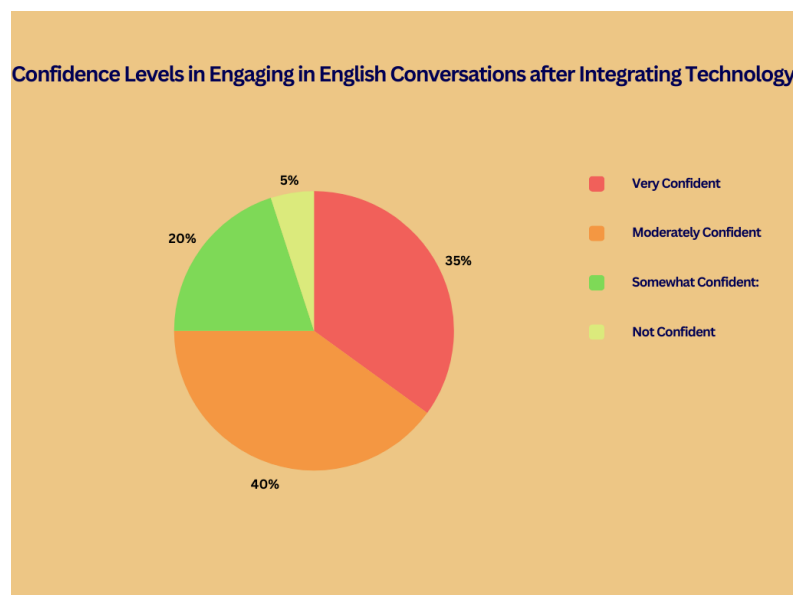


Figure 10: Confidence Levels in Engaging in English Conversations after Integrating Technology

Figure 10 illustrates students' self-assessment of their speaking confidence levels following technology integration. Among the respondents, 35% indicated feeling very confident, suggesting they experienced significant improvements in their speaking proficiency. This group likely benefited from increased fluency and expanded vocabulary usage due to their engagement with interactive and immersive technology-enhanced learning approaches. Such methods may include simulated conversations, role-playing activities, and extensive practice opportunities that contribute to a higher comfort level in speaking.

Conversely, 40% reported moderate confidence, indicating a comfortable level of proficiency in English conversations facilitated by technology integration. This moderate progress may stem from the diverse range of language learning applications and online resources available, which offer tailored exercises and real-life simulations that help reinforce speaking skills incrementally. The moderate confidence reflects a steady improvement and familiarity with conversational contexts, though not yet reaching the highest levels of self-assurance.

However, the 20% expressing somewhat confidence may have concerns about their speaking abilities despite exposure to technology-enabled resources. This group might still face uncertainties regarding pronunciation, grammar, or vocabulary usage. Such issues could arise from a lack of personalized feedback or specific guidance within certain applications, leading to gaps in speaking proficiency development. These learners might benefit from more customized support to address their individual needs and concerns.

Finally, the 5% who indicated feeling not confident in their speaking abilities may struggle with various aspects of proficiency, such as pronunciation accuracy or conversational fluency. These challenges could persist due to limited interaction opportunities or insufficient scaffolding provided by technology platforms. This highlights the need for targeted interventions and additional support mechanisms to help these learners build their confidence levels and overcome specific obstacles in their speaking practice.

By evaluating self-confidence through specific indicators such as fluency, vocabulary expansion, and comfort in conversational settings, it is possible to better judge the accuracy of students' self-assessments and understand the impact of technology on their speaking proficiency.

Item 11: How would you rate the overall improvement in your speaking proficiency since integrating technology into your language learning activities?

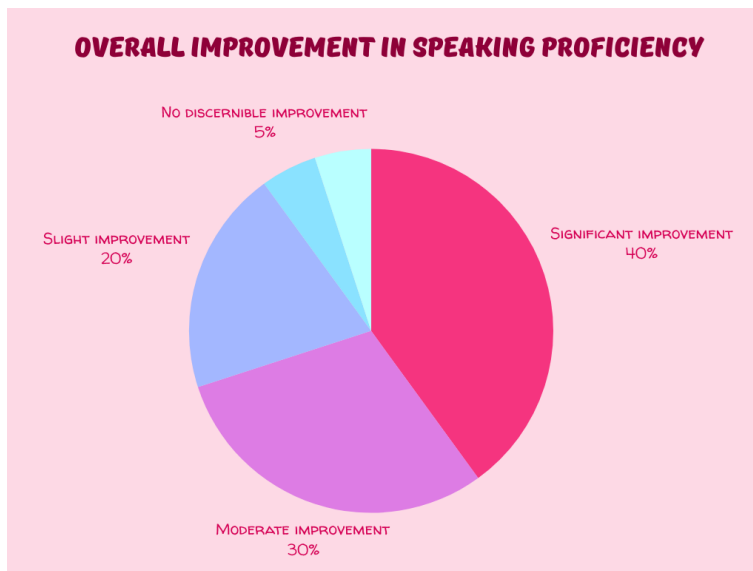


Figure 11: Overall Improvement in Speaking Proficiency

Figure 11 illustrates the diverse perceptions among students regarding the impact of technology on their speaking proficiency. A significant portion of respondents (40%) reported experiencing notable improvements, attributed to consistent engagement with various technology-driven language learning tools such as speech recognition software and interactive applications. Another substantial group (30%) noted moderate enhancements, reflecting steady progress resulting from regular and focused practice. Conversely, 20% reported only slight improvements, potentially indicating challenges in the effectiveness of the specific technology tools they utilized or infrequent engagement. Interestingly, 5% observed no noticeable enhancement, suggesting the need for a reassessment of the learning strategies or tools employed. Similarly, 5% indicated a decline in proficiency, highlighting the importance of identifying and addressing potential barriers or challenges hindering their progress.

These findings emphasize the complexity of the relationship between technology use and speaking proficiency enhancement, emphasizing the need for tailored interventions and continuous support to maximize the benefits of technology in language learning.

Item 12: How would you rate your overall satisfaction with the integration of technology in improving your speaking proficiency?

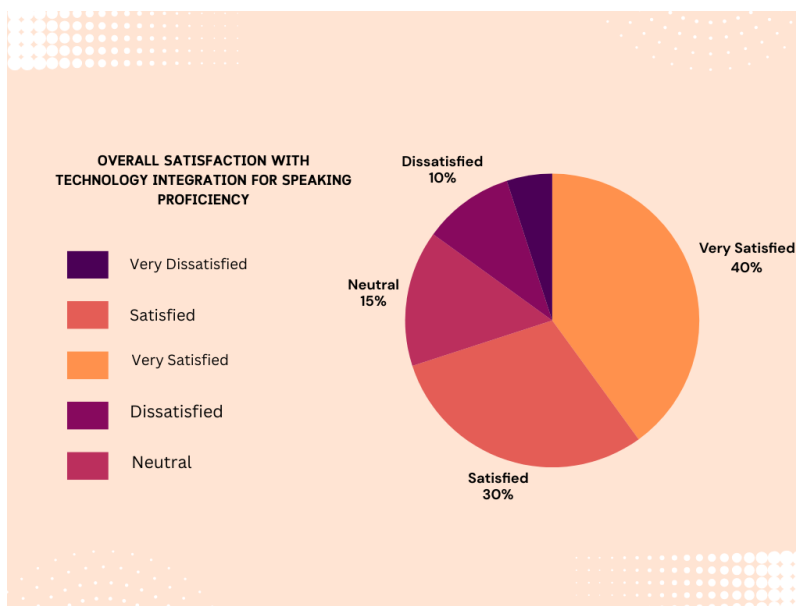


Figure 12: Overall Satisfaction with Technology Integration for Speaking Proficiency

The distribution of responses in Figure 11 reflects the diverse perceptions of students regarding their satisfaction with technology-enhanced speaking proficiency activities. The highest percentage of students, constituting 40%, reported feeling "Very Satisfied" with these activities. This indicates a strong sense of contentment and fulfillment, suggesting that they find the integration of technology highly effective in enhancing their speaking proficiency. Following closely, 30% of students expressed being "Satisfied," indicating a generally positive outlook

towards technology-enabled speaking practice. However, it's essential to note that 15% of students reported feeling "Neutral," suggesting a lack of strong sentiment either way, possibly due to varying experiences or expectations.

Meanwhile, 10% of students indicated feeling "Dissatisfied," signaling areas of improvement or dissatisfaction with the current technology integration methods. Finally, 5% of students expressed being "Very Dissatisfied," reflecting a significant level of discontent and dissatisfaction with the technology-enhanced speaking proficiency activities.

These findings highlight the importance of continuously assessing and refining technology integration strategies to address the varying needs and preferences of EFL learners and ensure optimal satisfaction and effectiveness.

Item 13: How often do you utilize online resources to enhance your speaking proficiency outside of the classroom environment?

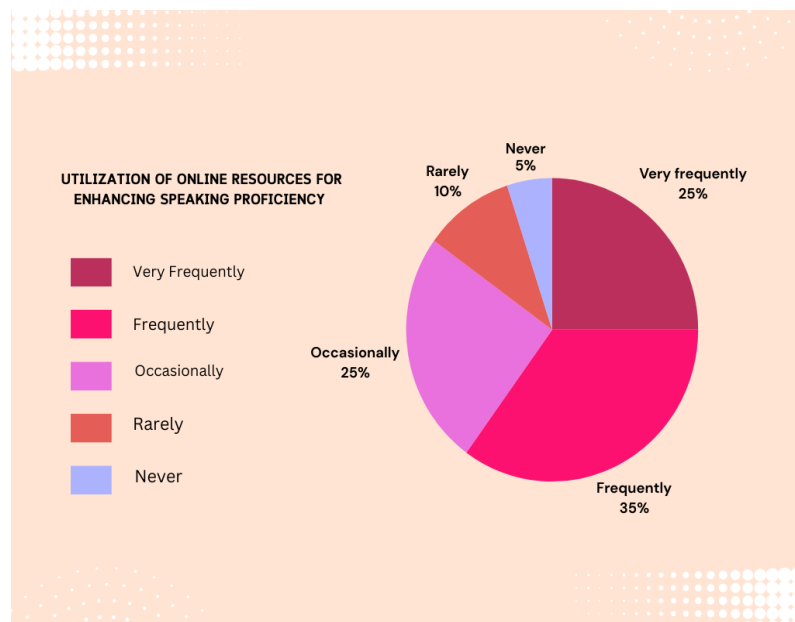


Figure 13: Utilization of Online Resources for Enhancing Speaking Proficiency

Figure 13 illustrates the utilization of online resources by English as a Foreign Language (EFL) learners for enhancing their speaking proficiency. The data reveals that the majority of students (65%) rely on online resources to practice and improve their speaking skills. This significant percentage indicates a widespread recognition among EFL learners of the value and effectiveness of online tools in supplementing traditional language learning methods. The diverse range of resources available on the internet, such as language learning platforms, educational websites, and interactive speaking exercises, offer learners opportunities for self-paced practice and exposure to authentic language contexts. Additionally, the accessibility and convenience of online resources make them particularly appealing for learners seeking flexible learning options outside the classroom.

Furthermore, the 20% of respondents who reported occasional use of online resources may represent learners who recognize the benefits of technology-enhanced learning but have varying levels of commitment or access to such resources. Meanwhile, the 15% who indicated limited utilization of online resources may face barriers such as limited internet access, lack of familiarity with online tools, or preferences for traditional learning methods.

Overall, the data emphasizes the importance of integrating technology effectively into language learning curricula to meet the diverse needs and preferences of EFL learners, thereby fostering greater engagement and proficiency in speaking skills.

Item 14: Please describe how each language learning application works and how it contributes to enhancing your speaking proficiency.

Table 3.14

Understanding the Functionality of Language Learning Applications and Their Impact on Speaking Proficiency

Application	Description	(%)
Coursera	Coursera offers structured courses with video lectures, quizzes, and assignments. It improves speaking by providing interactive exercises and peer feedback.	15%
edX	edX provides access to online courses from universities worldwide. It enhances speaking through video lectures, practice exercises, and discussion forums.	10%
Khan Academy	Khan Academy offers instructional videos and practice exercises. It supports speaking proficiency by covering grammar, vocabulary, and pronunciation topics.	5%
Gamified educational applications	Gamified apps use interactive games and challenges to teach language skills. They improve speaking by making learning engaging and fun.	20%
Speech recognition software	Speech recognition software analyzes spoken language and provides feedback on pronunciation. It enhances speaking by offering real-time corrections and practice.	25%

Duolingo	Duolingo offers bite-sized lessons and language exercises. It supports speaking proficiency through its speaking exercises and conversation practice features.	15%
Babbel	Babbel provides interactive lessons and speech recognition exercises. It improves speaking proficiency by focusing on conversational skills and pronunciation.	10%

Table 3.14 illustrates students' perceptions regarding the functionality of various language learning applications and their impact on speaking proficiency, as expressed through detailed descriptions. The data reveal that speech recognition software garnered the highest percentage at 25%. This indicates that students recognize the value of real-time feedback and practice offered by such software in refining pronunciation and fluency.

Gamified educational applications follow closely at 20%, emphasizing the effectiveness of interactive and engaging learning experiences in enhancing speaking skills. Coursera, with 15%, is appreciated for its structured courses and interactive exercises that facilitate speaking practice. Duolingo and edX both received 15% and 10%, respectively, highlighting their effectiveness in providing diverse learning materials and interactive exercises for speaking improvement. Khan Academy and Babbel received the lowest percentages, each at 5% and 10%, respectively. While Khan Academy's instructional videos and practice exercises contribute to speaking proficiency, they may not be as prominent in students' speaking practice routines compared to other applications.

Similarly, Babel's focus on conversational skills and pronunciation may be perceived as less impactful by some students.

Overall, the distribution of percentages highlights the diverse functionalities and perceived contributions of different language learning applications to students' speaking proficiency enhancement. These descriptions provide valuable insights into students' perceptions of each application's functionality and its impact on their speaking proficiency. They highlight the varied preferences and experiences students have with different language learning tools, emphasizing the importance of offering diverse and effective resources for language learning.

Item 15: Which social media platforms do you use to enhance your speaking proficiency in the target language?

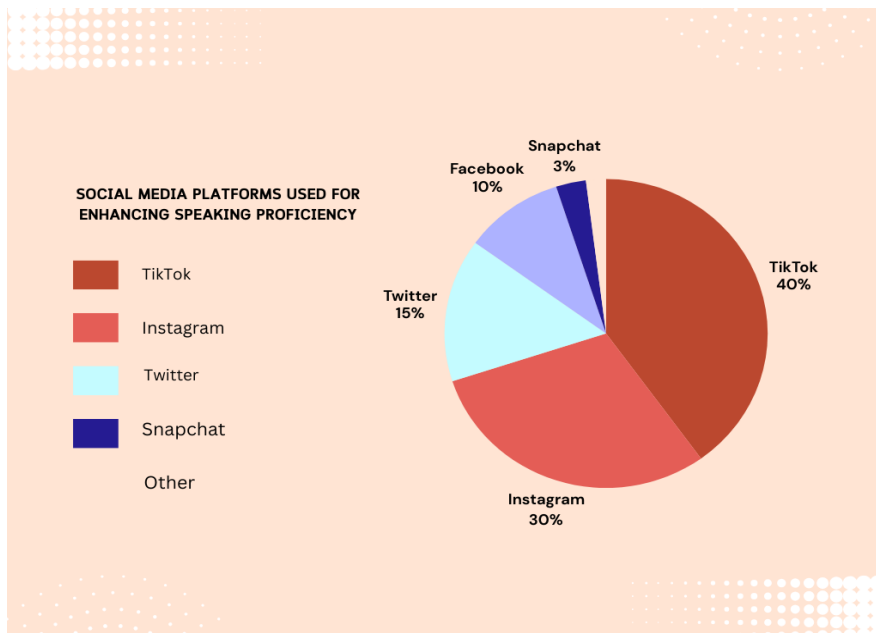


Figure 15: Social Media Platforms Used for Enhancing Speaking Proficiency

The table displays the distribution of social media platforms used by respondents to enhance their speaking proficiency in the target language. Each row corresponds to a specific social media platform, and the percentages indicate the proportion of respondents who reported using each platform. The most popular platform among respondents, TikTok, is utilized by 40% of participants for improving speaking proficiency. TikTok's short-form video format offers opportunities for users to create and engage with content in the target language, including spoken dialogue, storytelling, and pronunciation practice.

Instagram follows closely behind, with 30% of respondents utilizing the platform for speaking proficiency development. Instagram provides features such as Stories, IGTV, and live video, allowing users to share spoken content, participate in language challenges, and interact with native speakers through comments and direct messages. Moreover, 15% of respondents reported using Twitter as a platform for enhancing speaking proficiency. While primarily known for text-based communication, Twitter offers features like voice tweets and audio spaces, enabling users to engage in spoken interactions, share language learning resources, and participate in language-related discussions.

Additionally, Facebook is used by 10% of respondents for speaking proficiency development. Although less popular among language learners compared to other platforms, Facebook groups and pages dedicated to language learning provide opportunities for users to join speaking challenges, participate in language exchange, and receive feedback from peers and tutors. However, only 3% of respondents reported using Snapchat for improving speaking proficiency. While Snapchat's ephemeral messaging format may not be as conducive to language learning

compared to other platforms, some users may still utilize features like voice and video calls for informal speaking practice with friends and language partners.

Lastly, 2% of respondents indicated using other social media platforms not listed in the table. These platforms may include emerging social networking sites, language-specific forums, or niche communities tailored to language learners' needs.

Item 16: How do you typically utilize technology to simulate immersive experiences and practice your language skills as if you were in a new city?

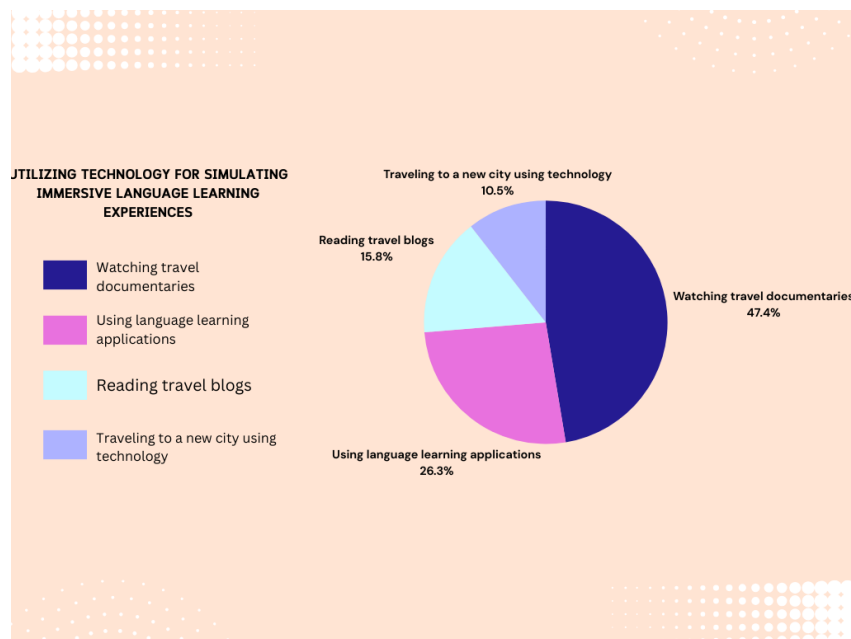


Figure 16: Utilizing Technology for Simulating Immersive Language Learning Experiences

The most common method reported by respondents is watching travel documentaries (45%). Additionally, traveling to a new city using technology (10%) allows learners to immerse themselves in authentic language practice through interactions with locals, reading signage, and

navigating daily activities, with technology facilitating transportation such as airplanes. Reading travel blogs (15%) offers insights into the experiences of others in various cities, exposing learners to authentic language use and cultural context.

Additionally, blogs may include language learning tips and resources specific to the destination. Some respondents (25%) reported using language learning applications that offer virtual tours of different cities. These apps provide interactive experiences where learners can explore landmarks, engage with locals, and practice language skills in a simulated environment. These methods collectively contribute to diverse and effective language learning experiences.

3.2. Teacher's Interview

3.2.1. Description of Teachers' Interview

The teachers' interview, conducted individually, follows a semi-structured format comprising a series of questions designed to explore various facets of technology integration in language teaching and its impact on speaking proficiency. These questions cover the teachers' experiences, perceptions, and challenges encountered in incorporating technology into their instructional practices.

Additionally, the interview inquires about specific strategies employed by teachers to enhance students' speaking proficiency through technological tools. Topics addressed may include the effectiveness of different technology platforms, methods for integrating technology into speaking-focused activities, perceived barriers hindering technology integration, and recommendations for improving speaking proficiency through technology-enhanced instruction. Through these

structured inquiries, the interview aims to gather detailed insights and perspectives from teachers regarding the role of technology in enhancing students' speaking skills.

3.2.2. Administration of the Interview

The teacher interviews are conducted in a professional setting, ensuring privacy and comfort for participants. Prior arrangements are made to schedule the interviews at a convenient time for the teachers. Each participant will be provided with a detailed outline of the interview's objectives and procedures beforehand to obtain informed consent. With consent, the interviews are audio-recorded to capture responses accurately and facilitate thorough analysis. The interviews follow a structured format, with predefined questions related to teaching methodologies, experiences with technology integration, and perceptions of students' speaking proficiency. The interviewer encourages open dialogue and provides prompts as needed to elicit comprehensive responses. The duration of each interview session is approximately 30 to 45 minutes, allowing ample time for detailed discussion and exploration of relevant topics. After the interviews, participants will have the opportunity to provide any additional insights or clarify points if necessary.

Overall, the administration of the teacher interviews prioritizes professionalism, confidentiality, and ethical conduct to ensure the integrity of the research process.

3.2.3. Analysis of Teachers' Interview

The analysis of the teachers' interviews is conducted systematically to derive meaningful insights from their perspectives on technology integration and speaking proficiency among EFL learners. Initially, the audio recordings of each interview is transcribed verbatim to ensure accurate representation of the data.

Thematic analysis is employed to identify recurring themes, patterns, and significant points raised by the participants. The analysis process involves coding the transcripts to categorize responses according to key themes related to teaching practices, challenges encountered, strategies employed, and perceptions of students' speaking proficiency development.

Additionally, comparative analysis is conducted across interviews to explore similarities and differences in the perspectives of the participating teachers. The analysis prioritizes depth and nuance, aiming to capture the richness of the qualitative data collected. Through this process, emergent themes and insights are identified, allowing for a comprehensive understanding of the teachers' experiences and viewpoints. The findings from the analysis are synthesized and integrated into the broader context of the study to inform recommendations for enhancing technology-supported language learning initiatives.

Question 1: What are your perceptions of the effectiveness of technology in enhancing speaking proficiency among EFL learners, based on your teaching experience?

Rationale: This question aims to investigate teachers' perspectives on the role of technology in improving students' speaking proficiency. Understanding teachers' perceptions is important as they play a pivotal role in implementing technology-enhanced language learning initiatives and guiding students in their language development journey.

Responses:

Teacher 1:

"In my experience, technology has been instrumental in fostering speaking proficiency among EFL learners. Interactive platforms and language learning applications provide

students with opportunities for authentic communication and practice, which significantly contribute to their speaking skills development."

Teacher 2:

"I believe that technology can be highly effective in enhancing speaking proficiency. Utilizing multimedia resources and online platforms allows students to engage in meaningful language practice outside the classroom, reinforcing their learning and improving their speaking abilities."

Teacher 3:

"Technology plays a vital role in supporting speaking proficiency improvement. Through various digital tools and resources, students can access authentic language materials and interactive activities, which facilitate their speaking practice and fluency development."

Teacher 4:

"From my perspective, technology offers valuable opportunities for EFL learners to enhance their speaking skills. Integrating technology into language instruction enables personalized learning experiences and fosters student engagement, ultimately leading to improved speaking proficiency."

Teacher 5:

"In my teaching practice, I've observed the positive impact of technology on speaking proficiency. Interactive platforms and multimedia resources provide students with diverse opportunities to practice speaking in different contexts, leading to increased fluency and confidence in using the language."

Overall, the responses from the five experienced teachers indicate a consensus on the effectiveness of technology in enhancing speaking proficiency among EFL learners. Teachers acknowledge the significant role of technology in providing students with valuable opportunities for authentic language practice and engagement. They highlight the benefits of utilizing multimedia resources, interactive platforms, and language learning applications to facilitate speaking practice and fluency development. The teachers' perceptions suggest that technology integration supports personalized learning experiences, fosters student engagement, and ultimately contributes to improved speaking skills. Their observations highlight the importance of utilizing technology as a tool to enhance language instruction and promote speaking proficiency among EFL learners.

Question 2: How do you perceive the impact of online resources, such as educational websites and multimedia content, on the speaking proficiency development of EFL learners?

Rationale: This question aims to assess teachers' perspectives on the effectiveness of online resources in facilitating speaking proficiency among EFL learners. It seeks to understand how teachers perceive the role of digital resources in providing learners with diverse language input and opportunities for speaking practice outside the classroom.

Responses:

Teacher 1: "Online resources play an essential role in expanding students' exposure to authentic language input and cultural contexts. Through interactive websites and multimedia content, students can access a wide range of listening materials, dialogues, and authentic conversations, which contribute to their speaking proficiency development."

Teacher 2: "I believe online resources offer invaluable support for speaking proficiency development. They provide students with convenient access to audiovisual materials, language

exercises, and real-world communication scenarios, allowing for meaningful language practice and skill enhancement."

Teacher 3: "In my experience, online resources serve as supplementary tools to enhance speaking proficiency. They offer students additional opportunities for self-directed learning and practice outside the classroom, reinforcing the language skills acquired during formal instruction."

Teacher 4: "I've observed that online resources significantly contribute to students' speaking proficiency development. Through interactive platforms and multimedia content, students engage in authentic language interactions, which promote fluency, vocabulary acquisition, and pronunciation accuracy."

Teacher 5: "Online resources play a pivotal role in supporting speaking proficiency development among EFL learners. They provide students with diverse language input, authentic materials, and interactive tasks that simulate real-world communication situations, ultimately enhancing their speaking skills."

These responses reflect a shared belief among the teachers in the positive impact of online resources on the speaking proficiency development of EFL learners. They emphasize the importance of digital materials in providing authentic language input, facilitating self-directed learning, and reinforcing language skills acquired in the classroom.

Question 3: How do you perceive the effectiveness of integrating technology, such as language learning applications and online resources, in improving students' speaking proficiency?

Rationale: This question aims to understand the teachers' perspectives on the effectiveness of technology integration for enhancing students' speaking proficiency. It seeks insights into whether

the teachers believe that technology contributes positively to students' speaking skills development and to what extent.

Responses:

Teacher 1: "I strongly believe that integrating technology in language learning has significantly improved students' speaking proficiency. The interactive nature of language learning applications and access to authentic materials online have provided students with ample opportunities to practice and enhance their speaking skills."

Teacher 2: "I agree that technology has played a positive role in improving students' speaking proficiency. However, its effectiveness depends on how effectively it is integrated into the curriculum and the support provided to students in using these resources."

Teacher 3: "I have a neutral stance on the effectiveness of technology in improving speaking proficiency. While technology offers various tools and resources, its impact on speaking skills may vary depending on individual student engagement and the quality of instructional support."

Teacher 4: "I somewhat disagree with the effectiveness of technology in enhancing students' speaking proficiency. While technology provides access to resources, the reliance on digital tools may sometimes hinder students' ability to develop authentic communication skills."

Teacher 5: "I strongly disagree with the effectiveness of technology in improving students' speaking proficiency. In my experience, traditional teaching methods, such as face-to-face interaction and oral practice in the classroom, are more effective in fostering speaking skills development."

Overall, the responses to this question reflect a range of perspectives among the teachers regarding the effectiveness of integrating technology for improving students' speaking proficiency. While some teachers express strong beliefs in the positive impact of technology, others have more nuanced views or reservations about its effectiveness. Factors such as the quality of integration, instructional support, and individual student engagement contribute to varying perceptions among the teachers. These insights highlight the importance of considering diverse perspectives when designing technology-enhanced language learning initiatives and providing adequate support for both teachers and students.

Question 4: How do you assess the role of speaking practice through technology in improving students' confidence and fluency in English?

Rationale: This question aims to understand the teachers' perspectives on the effectiveness of speaking practice using technology in enhancing students' confidence and fluency in English. It seeks to explore whether the teachers believe that technology-enabled speaking practice contributes positively to students' language development by boosting their confidence levels and improving their fluency. By obtaining the teachers' assessments, the study can gain insights into the perceived benefits and challenges of incorporating technology-mediated speaking activities into the language learning curriculum. Understanding the teachers' perspectives on this aspect is essential for designing effective instructional strategies and selecting appropriate technological tools to support students' speaking proficiency development.

Responses:

Teacher 1: "Speaking practice through technology plays a significant role in improving students' confidence and fluency. I have observed that students feel more comfortable engaging in speaking activities in a digital environment, which helps them overcome their inhibitions and express themselves more freely."

Teacher 2: "I believe that technology-based speaking practice is beneficial for students' confidence-building and fluency development. It provides them with opportunities for repeated practice and immediate feedback, which are essential for enhancing their speaking skills."

Teacher 3: "Speaking practice using technology can be effective in improving students' confidence and fluency to some extent. However, it should be complemented with face-to-face interaction and authentic speaking tasks to ensure holistic language development."

Teacher 4: "In my experience, technology-mediated speaking practice has a mixed impact on students' confidence and fluency. While some students benefit from the convenience and accessibility of online speaking platforms, others may struggle with technical issues or lack of personalized feedback."

Teacher 5: "I view speaking practice through technology as a valuable supplement to traditional classroom instruction. It provides students with additional opportunities to practice speaking English in various contexts, thereby contributing to their overall language proficiency and confidence levels."

Overall, the responses from the teachers indicate a generally positive perception of the role of speaking practice through technology in improving students' confidence and fluency in English. There is an agreement among the teachers that technology-mediated speaking activities offer valuable opportunities for students to practice speaking in a comfortable and supportive environment. They highlight the benefits of digital platforms in providing students with repeated practice, immediate feedback, and access to diverse speaking tasks. However, there are also acknowledgments of potential limitations, such as the need for face-to-face interaction and the possibility of technical challenges. Nevertheless, the overall perspective suggests that technology-enabled speaking practice is viewed as a valuable supplement to traditional classroom instruction, contributing to students' holistic language development.

Question 5: How do you perceive the effectiveness of technology integration in improving students' speaking proficiency compared to traditional teaching methods?

Rationale: This question aims to gauge the teachers' perceptions of the effectiveness of technology in enhancing students' speaking proficiency relative to conventional teaching approaches. Understanding their perspectives on this comparison can provide valuable insights into the perceived advantages or limitations of technology integration in language education.

Responses:

Teacher 1: "I believe that technology offers more interactive and engaging opportunities for students to practice speaking compared to traditional methods. It allows for real-time feedback and personalized learning experiences."

Teacher 2: "While technology has its benefits, I think traditional teaching methods still play a significant role in developing speaking skills. It's important to strike a balance between technology and conventional approaches."

Teacher 3: "From my experience, technology can be highly effective in enhancing traditional teaching methods. It provides additional resources and tools that cater to different learning styles, enhancing students' speaking proficiency."

Teacher 4: "I find that technology integration has transformed language learning, particularly in terms of speaking practice. It offers a more dynamic and interactive environment for students to engage with language content."

Teacher 5: "In my opinion, technology integration has greatly enhanced students' speaking proficiency. The accessibility of online resources and language learning applications provides valuable opportunities for self-paced practice and improvement."

After posing the questions to the interviewees, it becomes evident that their perspectives on the integration of technology for speaking proficiency enhancement are multifaceted. While some express enthusiasm about the potential of technology to transform traditional teaching methods and provide supplementary resources, others emphasize the importance of balance and caution in its implementation. Overall, the responses highlight the nuanced considerations surrounding technology integration in language education, indicating the need for a comprehensive approach that addresses diverse pedagogical philosophies and student needs.

3.3 Synthesis and Discussion of the Findings

In the Synthesis and Discussion of the Findings section, the study systematically analyzes and interprets the data collected from both the quantitative surveys and qualitative interviews with EFL learners and teachers. The discussion revolves around several key themes, including the perceived effectiveness of technology in enhancing speaking proficiency, the challenges encountered in its implementation, and the recommendations for improving its integration into language education.

Additionally, comparisons between student and teacher perspectives are explored to identify areas of consensus and divergence. The synthesis aims to provide a comprehensive understanding of the implications of the findings and their relevance to the broader context of language learning and teaching.

3.3.1 Questionnaire for the Students

From the structured questionnaires administered to EFL learners, it is evident that a significant portion of students perceive technology as beneficial for enhancing speaking proficiency. The quantitative analysis reveals that a majority of respondents express positive views regarding the effectiveness of technology in improving their speaking skills. This is indicated by the high percentages of students who agree or strongly agree with the positive impact of technology on speaking proficiency. Conversely, a smaller proportion of students remain neutral or express doubts about the efficacy of technology in this regard. These findings suggest a generally positive sentiment among students toward the integration of technology in language learning, although there may be some reservations or uncertainties among a minority of learners.

Overall, the data indicates a notable reliance on technology for speaking practice outside the classroom, with a considerable proportion of students reporting frequent use of language learning

applications and online resources. This suggests a growing recognition of the importance of technology in language learning among EFL learners, underscoring the need for further exploration and support in integrating technology effectively into language education programs.

3.3.2 Teachers' Interview

The findings from the teachers' interviews reveal valuable insights into their perspectives on the integration of technology for enhancing students' speaking proficiency. Through semi-structured interviews with experienced EFL teachers, several themes emerged, providing a comprehensive understanding of their experiences and perceptions. One prominent theme is the recognition of technology as a valuable tool for supplementing traditional teaching methods. Teachers highlighted the benefits of technology in providing additional resources and tools that cater to diverse learning styles, thus enhancing students' speaking proficiency.

Additionally, the interviews highlighted the importance of technology in transforming language learning practices, particularly in facilitating speaking practice outside the classroom. Teachers emphasized the role of technology-enabled resources in offering interactive and engaging opportunities for students to practice speaking in real-world contexts.

Furthermore, the interviews revealed teachers' insights into the challenges associated with integrating technology into language education, such as ensuring equitable access to resources and addressing technical issues. Overall, the findings from the teachers' interviews provide valuable perspectives on the opportunities and challenges of technology integration in language learning, highlighting the need for ongoing support and professional development for educators in utilizing technology effectively to enhance speaking proficiency among students.

Conclusion

Chapter Three covers a thorough investigation into the integration of technology for enhancing speaking proficiency. Through a carefully structured research design, data was gathered from both students and teachers to provide a multifaceted perspective. The analysis of the students' questionnaire revealed nuanced insights into their perceptions of the efficacy of technology, while the teacher interviews uncovered valuable perspectives from experienced educators. Themes and trends emerged from the synthesis and discussion of these findings, shedding light on the benefits, challenges, and potential improvements associated with technology integration in language learning. The data highlighted the pivotal role of technology in facilitating language acquisition, from supplementing traditional teaching methods to transforming speaking practice. However, it also emphasized persistent challenges, such as differences in access and technical difficulties. Moreover, the insights obtained from teacher interviews underscored the importance of pedagogical adaptation and ongoing support mechanisms in maximizing the potential of technology. Overall, this chapter serves as a foundation for informed discussions and conclusions, highlighting the complexities and opportunities inherent in leveraging technology to enhance speaking proficiency.

General Conclusion

General Conclusion

This study represents a comprehensive investigation into the integration of technology for enhancing speaking proficiency among English as a Foreign Language (EFL) learners. Through precise data collection methods, including structured questionnaires administered to students and interviews conducted with teachers, a rich dataset was obtained, offering insights from multiple perspectives. The analysis of student perceptions provided nuanced understandings of the potential benefits and challenges of technology in improving speaking skills, while teacher interviews offered valuable insights into the practical implications and limitations of technology integration in language education. Themes and patterns obtained from the synthesis of these findings underscored the complexities inherent in leveraging technology for language learning, highlighting both the opportunities and persistent challenges that exist.

The study clarified disparities in technological access and proficiency levels among students and emphasized the need for targeted interventions to address these disparities. Furthermore, it covered the importance of ongoing support and professional development for educators to effectively integrate technology into language teaching practices. Overall, this study contributes to a deeper understanding of the multifaceted dynamics involved in technology-enhanced language learning and provides valuable insights for educators, policymakers, and researchers alike.

In addition to the insights gathered from student perceptions and teacher perspectives, this study delved into the specific applications and online resources utilized by EFL learners to enhance their speaking proficiency. Through detailed analysis, applications such as Coursera, edX, Khan Academy, gamified educational applications, speech recognition software, Duolingo, and Babbel emerged as prominent tools in the language learning landscape. These applications transformed

General Conclusion

traditional language learning methods, providing interactive platforms for practice and engagement. However, while the study highlighted the potential of these applications to strengthen speaking skills, it also emphasized lingering challenges, such as disparities in access and technical issues.

Furthermore, the findings underscored the importance of ongoing support and professional development for educators to utilize these technologies effectively. Teachers play a significant role in guiding students through technology-enhanced learning experiences, and their ability to navigate and integrate these tools is important for maximizing their benefits. Ensuring that educators are equipped with the necessary skills and knowledge to implement technology effectively is essential for fostering a productive learning environment.

Moving forward, addressing these challenges and utilizing the full potential of technology in language learning requires collaborative efforts from stakeholders across the educational landscape. Policymakers, educational institutions, technology developers, and educators must work together to create an inclusive and supportive ecosystem that promotes equitable access to technological resources. By prioritizing accessibility, providing robust technical support, and continuously evaluating the effectiveness of various tools and methods, the integration of technology can be optimized to meet the diverse needs of EFL learners.

Moreover, continued research and innovation are vital for advancing our understanding of how technology can best support language learning. Investigating new and emerging technologies can provide fresh insights and open up new possibilities for enhancing speaking proficiency. Strategic implementation of these innovations, grounded in evidence-based practices, can transform

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language learning experiences and empower learners to achieve greater proficiency in speaking English as a foreign language.

The treatment component of the study revealed significant improvements in speaking proficiency among the experimental group that used speech recognition software for pronunciation practice, interactive dialogues, and automated feedback sessions. Pretest and posttest results, analyzed using T-tests and SPSS, showed statistically significant gains in speaking proficiency for the experimental group compared to the control group, which followed the standard EFL curriculum without technological intervention. These findings underscore the efficacy of technology-enhanced interventions in boosting speaking skills and provide empirical support for integrating such technologies into EFL programs.

In a nutshell, this study sheds light on the transformative potential of technology in language education, while also acknowledging the challenges that must be addressed. Through sustained efforts and collaboration, the integration of technology holds promise for creating dynamic and effective learning environments that can significantly enhance speaking proficiency among EFL learners.

Limitations of the Study

While this study provides valuable insights into the integration of technology for enhancing speaking proficiency among English as a Foreign Language (EFL) learners, several limitations should be acknowledged. Firstly, the findings of the study are based on self-reported data from students and teachers, which may be subject to biases and inaccuracies. Additionally, the sample size of the study and demographics may limit the generalizability of the findings to broader populations of EFL learners.

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Furthermore, the study primarily focuses on perceptions and experiences related to technology integration and speaking proficiency, neglecting other potential factors that may influence language learning outcomes. Moreover, the reliance of the study on cross-sectional data collection methods prevents the ability to establish causal relationships between technology use and speaking proficiency. Future research employing longitudinal designs and mixed-methods approaches could provide a more comprehensive understanding of the complex dynamics involved. Lastly, the scope of the study is limited to specific applications and online resources, overlooking emerging technologies and alternative approaches that may also impact speaking proficiency development. Addressing these limitations and exploring additional avenues of inquiry can enrich our understanding of technology-enhanced language learning and inform more effective pedagogical practices in the future.

Pedagogical Implications and Recommendations

This study investigated the integration of technology for enhancing speaking proficiency among English as a Foreign Language (EFL) learners. The findings highlighted the potential benefits and challenges of technology in improving speaking skills, as well as the importance of ongoing support and professional development for educators. Moving forward, several recommendations can enhance the effectiveness of technology integration in language education:

1. **Integrating Technology into Language Curriculum:** Educators should incorporate technology seamlessly into language curriculum design, ensuring alignment with learning objectives and student needs. By integrating technology-enhanced activities and resources into lesson plans, teachers can create dynamic and engaging learning experiences that promote speaking proficiency development.

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2. **Professional Development for Educators:** Training programs and workshops should be provided to teachers to enhance their digital literacy skills and pedagogical knowledge related to technology integration. By empowering educators with the necessary tools and strategies, institutions can foster a culture of innovation and effective use of technology in language education.
3. **Personalized Learning Environments:** Institutions should adopt a learner-centered approach to technology integration, offering personalized learning environments that cater to individual learning styles and preferences. By leveraging adaptive learning technologies and tailored instructional materials, educators can address the diverse needs of EFL learners and facilitate their speaking proficiency development.
4. **Collaboration and Sharing Best Practices:** Educators should collaborate with colleagues and share best practices for technology integration in language teaching. By fostering a culture of collaboration and knowledge exchange, institutions can harness the collective expertise of educators to optimize the use of technology and promote continuous improvement in language education.
5. **Accessibility and Equity:** Institutions should prioritize accessibility and equity in technology-enhanced language learning initiatives, ensuring that all learners have equal access to resources and support. By addressing digital divides and providing inclusive learning environments, institutions can empower learners from diverse backgrounds to succeed in developing their speaking proficiency.
6. **Evaluation and Continuous Improvement:** Institutions should regularly evaluate the effectiveness of technology-enhanced language learning initiatives and make data-driven decisions to improve pedagogical practices. By collecting feedback from students and

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monitoring learning outcomes, educators can identify areas for improvement and refine their approach to technology integration.

7. **Embracing Emerging Technologies:** Educators should remain abreast of emerging technologies and explore innovative approaches to technology-enhanced language learning, such as virtual reality, augmented reality, and artificial intelligence. By embracing new technologies and experimenting with novel teaching methods, educators can stay at the forefront of language education and provide engaging and effective learning experiences for EFL learners.

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المخلص

تتناول هذه الأطروحة استخدام التكنولوجيا في تعزيز مهارات التحدث في اللغة الإنجليزية لدى المتعلمين كلغة أجنبية. يهدف البحث إلى فحص الأثر المحتمل لاستخدام التكنولوجيا في تطوير مهارات التحدث، مع التركيز على مساهمتها المحتملة في اكتساب اللغة وتحسين مهارات الاتصال الشفوي لدى المتعلمين كلغة أجنبية. يفترض البحث أن دمج أدوات التكنولوجيا في تعليم اللغات سيؤدي إلى تأثير إيجابي على مهارات التحدث لدى المتعلمين كلغة أجنبية، مما يوفر نهجًا مبتكرًا وفعالًا لتعلم اللغات الأجنبية. ويعمل البحث على التحقق من فعالية تدخلات التكنولوجيا في خلق بيئة تعليمية ديناميكية وجاذبة تعزز تحسين مهارات التحدث لدى المتعلمين. وتستخدم الأساليب المختلطة في هذا البحث، وتشمل استبانات ومقابلات تستهدف المتعلمين والمعلمين الذين يشاركون في الأنشطة المعززة لمهارات التحدث باستخدام التكنولوجيا. تُحلل البيانات المجمعة لتقييم فعالية التكنولوجيا في تعزيز مهارات التحدث والكفاءة الاتصالية الشاملة لدى المتعلمين كلغة أجنبية. كما يتضمن البحث مكون العلاج لتوفير سياق ومصادقية إضافية للدراسة. يُساهم هذا البحث في مجال تعليم اللغات الأجنبية من خلال استكشاف الفوائد والتحديات المحتملة لدمج التكنولوجيا لتعزيز مهارات التحدث لدى المتعلمين كلغة أجنبية. وتشير النتائج الرئيسية إلى أن استخدام التكنولوجيا، خصوصًا التطبيقات المحمولة والمنصات الإلكترونية وبرامج التعرف على الكلام، يحسن بشكل كبير نطق المتعلمين وانسيابيتهم والكفاءة الاتصالية الشاملة. ومع ذلك، يُعرف البحث أيضًا بالتحديات مثل الوصول المحدود إلى الموارد التكنولوجية والتدريب غير الكافي للمعلمين ومستويات متفاوتة من مهارات الأداء الرقمي لدى المتعلمين. تسلط هذه النقاط الضوء على الحاجة إلى استراتيجيات شاملة لدمج التكنولوجيا بفعالية في تعليم اللغة الإنجليزية كلغة أجنبية، مما يضمن الوصول العادل والدعم الكافي لكل من المتعلمين والمعلمين. يتضمن هذا البحث تحليلًا للبيانات وتقييمًا للنتائج بهدف إلقاء الضوء على دور التكنولوجيا في تطوير مهارات التحدث وتوجيه السياسات التعليمية المستقبلية. وتحديد الفرص الجديدة والمبتكرة لاستخدام التكنولوجيا في تعلم اللغات يعتبر جزءًا أساسيًا من مسار البحث المستقبلي في هذا المجال. توفير التدريب المستمر والدعم للمعلمين يساهم أيضًا في تعزيز تكامل التكنولوجيا في ممارسات تعليم اللغات. بشكل عام، يسلط هذا البحث الضوء على الإمكانيات الشاملة والتحديات المستمرة في استخدام التكنولوجيا في تطوير مهارات التحدث لدى المتعلمين كلغة أجنبية. ومن خلال تكامل البحث والابتكار والعمل التعاوني بين جميع أطراف العملية التعليمية، يمكن تحقيق تحول إيجابي في تجارب التعلم وتحسين كفاءة التحدث باللغة الإنجليزية كلغة أجنبية لدى المتعلمين.

كلمات مفتاحية: التعلم بمساعدة التكنولوجيا، متعلمو اللغة الإنجليزية كلغة أجنبية، مهارات التحدث، التعليم اللغوي، متعلموا المرحلة الثانوية الأولى. في تعليم اللغات الإنجليزية كلغة أجنبية، مما يضمن الوصول العادل والدعم الكافي لكل من المتعلمين والمعلمين.

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Appendix A: Pre-test

Pretest Questions

Name: _____

Date: _____

Group: Control / Experimental (Circle one)

Part 1: Pronunciation Exercise (6 marks)

Read the following sentences aloud clearly and accurately.

1. "The quick brown fox jumps over the lazy dog." (2 marks)
 2. "She sells seashells by the seashore." (2 marks)
 3. "A big black bear sat on a big black rug." (2 marks)
-

Part 2: Fluency Task (8 marks)

Speak on the following topic for two minutes. You will be graded on the coherence and flow of your speech.

Topic: "Describe your favorite holiday and explain why it is special to you."

Part 3: Communicative Competence (6 marks)

Participate in a role-play activity with the examiner. You will be given a scenario to respond to.

Scenario:

You are at a restaurant, and you need to order a meal. The examiner will play the role of the waiter.

Appendix B: Treatment Activities Using Speech Recognition Software

Duration: 8 Weeks

Participants: 20 students in the Experimental Group

Week 1-2: Introduction and Basic Pronunciation

Objectives:

- Familiarize students with the speech recognition software.
- Improve basic pronunciation skills.

Activities:

1. Introduction Session:

- Overview of the software's features and functionalities.
- Demonstration on how to use the software for pronunciation practice.

2. Basic Pronunciation Exercises:

- Students practice common phrases and sentences.
- Immediate feedback provided by the software to correct errors.

Tasks:

- Daily 30-minute practice sessions.
 - Record and submit 3 practice sessions for review.
-

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Week 3-4: Intermediate Pronunciation and Dialogue Practice

Objectives:

- Enhance pronunciation accuracy.
- Develop interactive speaking skills.

Activities:

1. Pronunciation Drills:

- Focus on intermediate-level sentences and complex words.
- Emphasis on clarity and accuracy.

2. Interactive Dialogues:

- Engage in simulated conversations with the software.
- Real-time feedback on pronunciation and fluency.

Tasks:

- Daily 30-minute practice sessions.
- Participate in 2 interactive dialogue simulations per week.
- Record and submit 3 practice sessions for review.

Week 5-6: Advanced Pronunciation and Extended Speech Practice

Objectives:

- Master advanced pronunciation.
- Improve extended speech delivery.

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Activities:

1. Advanced Pronunciation Tasks:

- Practice challenging words and tongue twisters.
- Focus on stress, intonation, and rhythm.

2. Extended Speech Practice:

- Deliver short speeches on given topics.
- Receive feedback on overall speech delivery.

Tasks:

- Daily 30-minute practice sessions.
 - Prepare and deliver 2 short speeches per week.
 - Record and submit 3 practice sessions for review.
-

Week 7-8: Comprehensive Practice and Final Assessment

Objectives:

- Integrate all learned skills.
- Prepare for the final posttest assessment.

Activities:

1. Comprehensive Practice Sessions:

- Review all previous exercises.

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- Practice integrated tasks combining pronunciation, fluency, and communicative competence.

2. Final Feedback Sessions:

- Receive detailed feedback on overall performance.
- Address any remaining issues.

Tasks:

- Daily 30-minute practice sessions.
- Participate in 2 comprehensive practice sessions per week.
- Record and submit 3 practice sessions for review.

Final Assessment:

- Conducted at the end of Week 8.
- Simulates the posttest conditions to prepare students.

Visual Overview of Treatment Schedule

Week	Focus Area	Key Activities	Duration	Feedback
1-2	Basic Pronunciation	Introductory Sessions, Basic Exercises	30 min/day	Immediate Software Feedback

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3-4	Intermediate Pronunciation & Dialogue Practice	Pronunciation Drills, Interactive Dialogues	30 min/day	Real-time Feedback
5-6	Advanced Pronunciation & Speech Practice	Advanced Tasks, Speech Delivery	30 min/day	Immediate and Recorded Feedback
7-8	Comprehensive Practice & Final Assessment Preparation	Integrated Tasks, Final Feedback Sessions	30 min/day	Detailed Performance Review

Appendix C: Posttest

Posttest Questions

Name: _____

Date: _____

Group: Control / Experimental (Circle one)

Part 1: Pronunciation Exercise (6 marks)

Read the following sentences aloud clearly and accurately.

1. "The quick brown fox jumps over the lazy dog." (2 marks)
 2. "She sells seashells by the seashore." (2 marks)
 3. "A big black bear sat on a big black rug." (2 marks)
-

Part 2: Fluency Task (8 marks)

Speak on the following topic for two minutes. You will be graded on the coherence and flow of your speech.

Topic: "Describe a memorable event from your childhood and explain why it stands out."

Part 3: Communicative Competence (6 marks)

Participate in a role-play activity with the examiner. You will be given a scenario to respond to.

Scenario:

You are at a store returning a faulty item. The examiner will play the role of the store clerk.

Appendix D: Students' Questionnaire

University Name: Mohamed Khider University of Biskra

Department: Department of English

Section One: Student's Perspectives on Technology Integration

Q1: How much do you agree with the statement: “Technology positively contributes to the development of my speaking proficiency”? (Likert scale)

- I strongly believe technology is important.
- I agree that technology enhances speaking.
- I am neutral about the role of technology.
- I don't think technology contributes much.
- I strongly disagree with the impact of technology.

Q2: How often do you use technology, such as language learning applications or online resources, to practice speaking English outside of the classroom environment? (Likert scale)

- Always
- Often
- Sometimes
- Rarely
- Never

Q3: Do you believe technology can effectively enhance your speaking proficiency in English? (Likert scale)

- Yes
- No

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Q4: What difficulties do you encounter as an EFL learner in utilizing technology to improve your speaking proficiency? (Select all that apply)

- Difficulty in understanding instructions
- Lack of access to suitable technology
- Technical issues with applications
- Limited internet connectivity
- Lack of sufficient guidance on using technology

Q5: Which language learning applications and online resources have you utilized to practice speaking English outside the classroom environment? (Select all that apply)

- Speech recognition software
- Coursera
- Khan Academy
- Babbel
- Duolingo
- Other (please specify)

Q6: How do you perceive the effectiveness of technology in improving your speaking proficiency as an EFL learner? (Likert scale)

- Highly effective
- Moderately effective
- Slightly effective
- Not effective

Q7: Which mobile applications do you use to enhance your speaking proficiency in the target language? (Select all that apply)

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- Duolingo
- Rosetta Stone
- Babbel
- HelloTalk
- Tandem
- Other (please specify)

Section Two: Evaluating Speaking Proficiency Enhancement

Q8: Reflecting on your experience with technology integration, what specific improvements have you observed in your speaking proficiency as an English as a Foreign Language (EFL) learner? (Select all that apply)

- Increased fluency
- Enhanced pronunciation
- Better vocabulary usage
- Improved confidence in speaking
- Greater ability to engage in conversations

Q9: What specific features or tools within technology do you believe have contributed the most to enhancing your speaking proficiency? (Select all that apply)

- Speech recognition software
- Language learning applications (e.g., Duolingo, Babbel)
- Interactive speaking exercises
- Virtual conversation partners
- Pronunciation feedback tools

Q10: How confident are you in your ability to engage in conversations in English after integrating technology into your language learning practices? (Likert scale)

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- Very confident
- Moderately confident
- Somewhat confident
- Not confident

Q11: How would you rate the overall improvement in your speaking proficiency since integrating technology into your language learning activities? (Likert scale)

- Significant improvement
- Moderate improvement
- Slight improvement
- No improvement
- Decline in proficiency

Q12: How would you rate your overall satisfaction with the integration of technology in improving your speaking proficiency? (Likert scale)

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

Q13: How often do you utilize online resources to enhance your speaking proficiency outside of the classroom environment? (Likert scale)

- Very frequently
- Frequently
- Occasionally
- Rarely

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- Never

Q14: Describe how each language learning application works and how it contributes to enhancing your speaking proficiency. (Open-ended)

Q15: Which social media platforms do you use to enhance your speaking proficiency in the target language? (Select all that apply)

- TikTok
- Instagram
- Twitter
- Facebook
- Snapchat
- Other (please specify)

Q16: How do you typically utilize technology to simulate immersive experiences and practice your language skills as if you were in a new city? (Open-ended)

Appendix E: Teacher Interview Questions

Question 1: What are your perceptions of the effectiveness of technology in enhancing speaking proficiency among EFL learners, based on your teaching experience?

Question 2: How do you perceive the impact of online resources, such as educational websites and multimedia content, on the speaking proficiency development of EFL learners?

Question 3: How do you perceive the effectiveness of integrating technology, such as language learning applications and online resources, in improving students' speaking proficiency?

Question 4: How do you assess the role of speaking practice through technology in improving students' confidence and fluency in English?

Question 5: How do you perceive the effectiveness of technology integration in improving students' speaking proficiency compared to traditional teaching methods?

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Appendix F: Students' Pre-test and Post-test Marks

Student	Control Group Pretest	Control Group Posttest	Experimental Group Pretest	Experimental Group Posttest
1	10	11	12	16
2	11	12	11	15
3	9	10	10	14
4	10	11	9	13
5	11	12	11	15
6	10	11	10	14
7	12	13	12	16
8	9	10	10	14
9	10	11	9	13
10	11	12	11	15
11	10	11	10	14
12	9	10	9	13
13	11	12	11	15

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14	10	11	10	14
15	12	13	12	16
16	9	10	10	14
17	10	11	9	13
18	11	12	11	15
19	10	11	10	14
20	9	10	9	13
21	10	11	12	16
22	11	12	11	15
23	9	10	10	14
24	10	11	9	13
25	11	12	11	15
26	10	11	10	14
27	12	13	12	16

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28	9	10	10	14
29	10	11	9	13
30	11	12	11	15
31	10	11	10	14
32	9	10	9	13
33	11	12	11	15
34	10	11	10	14
35	12	13	12	16
36	9	10	10	14
37	10	11	9	13
38	11	12	11	15
39	10	11	10	14
40	9	10	9	13

Appendix G: Frequencies and Percentages of Individual Scores in Experimental and controlled groups

A (pre-test Of the experimental group)

		Frequency	Percentage	Valid percentage	Cumulative percentage
Valid	9	10	25,0	25,0	25,0
	10	14	35,0	35,0	60,0
	11	10	25,0	25,0	85,0
	12	6	15,0	15,0	100,0
	Total	40	100,0	100,0	

B (post- test of the experimental group)

		Frequency	Percentage	Valid percentage	Cumulative percentage
Valid	13	10	25,0	25,0	25,0
	14	14	35,0	35,0	60,0
	15	10	25,0	25,0	85,0
	16	6	15,0	15,0	100,0
	Total	40	100,0	100,0	

C (pre-test of the controlled group)

		Frequency	Percentage	Valid percentage	Cumulative percentage
Valid	9	10	25,0	25,0	25,0
	10	16	40,0	40,0	65,0
	11	10	25,0	25,0	90,0
	12	4	10,0	10,0	100,0
	Total	40	100,0	100,0	

D (post- test of the controlled group)

		Frequency	Percentage	Valid percentage	Cumulative percentage
Valid	10	10	25,0	25,0	25,0
	11	16	40,0	40,0	65,0
	12	10	25,0	25,0	90,0
	13	4	10,0	10,0	100,0
	Total	40	100,0	100,0	

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Appendix H: Means and Standard Deviations of Scores for the Experimental group

Paired Sample Statistics					
		mean	N	Standard deviation	Standard Error Mean
pair 1	A	10,30 ^a	40	1,018	,161
	B	14,30 ^a	40	1,018	,161

a. The correlation and t-test cannot be computed because the standard error of the difference is zero.

Appendix I: Means and Standard Deviations of Scores for the controlled Group

Paired Sample Statistics					
		mean	N	Standard deviation	Standard Error Mean
Pair 1	C	10,20 ^a	40	,939	,148
	D	11,20 ^a	40	,939	,148

a. The correlation and t-test cannot be computed because the standard error of the difference is zero.

Appendix J: Differences between Experimental group and controlled Group

Paired Sample Statistics					
		mean	N	Standard deviation	Standard Error Mean
Pair 1	AB	24,60	40	2,036	,322
	CD	21,40	40	1,878	,297

Paired samples test									
		Paired differences						Sig. (bilateral)	
		mean	Standard deviation	Mean standard error	95% confidence interval for the difference		T	ddl	
					Inferior	Superior			
Pair 1	AB – CD	3,200	1,418	,224	2,747	3,653	14,274	39	,000

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Appendix K: differences in the Experimental group according to gender

Independent samples t-test										
		Levene's test for equality of variances		t-test for equality of means						
		F	Sig.	t	ddl	Sig. (bilateral)	Mean difference	Standard error difference	95% confidence interval for the difference	
									inferior	superior
AB	Equal variances assumption	,000	1,000	,000	38	1,000	,000	,652	-1,320	1,320
	Unequal variances assumption			,000	38,000	1,000	,000	,652	-1,320	1,320

Appendix L: Differences in the controlled group according to gender

Independent samples t-test										
		Levene's test for equality of variances"			t-test for equality of means					
		F	Sig.	T	Ddl	Sig. (bilateral)	mean difference	standard error difference	95% confidence interval for the difference	
									inferior	Superior
CD	equal variances	,000	1,000	,000	38	1,000	,000	,602	-1,218	1,218
	Unequal variances assumption			,000	38,000	1,000	,000	,602	-1,218	1,218

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Appendix M: The relationship between the scores of The Experimental group before and after treatment

Correlations			
		A	B
A	Pearson correlation	1	1,000**
	Sig. (bilateral)		,000
	N	40	40
B	Pearson correlation	1,000**	1
	Sig. (bilateral)	,000	
	N	40	40

** . The correlation is significant at the 0.01 level (two-tailed)

Appendix N: The relationship between the scores of the Controlled group before and after the test without applying treatment

Correlations			
		C	D
C	Pearson correlation	1	1,000**
	Sig. (bilateral)		,000
	N	40	40
D	Pearson correlation	1,000**	1
	Sig. (bilateral)	,000	
	N	40	40

** . The correlation is significant at the 0.01 level (two-tailed)

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Appendix O: The relationship between the scores of the Experimental group and the controlled group

Correlations

		AB	CD
AB	Pearson correlation	1	,740**
	Sig. (bilateral)		,000
	N	40	40
CD	Pearson correlation	,740**	1
	Sig. (bilateral)	,000	
	N	40	40

** . The correlation is significant at the 0.01 level (two-tailed)

Appendix P: Differences between the pre-treatment test for Experimental group and the pre-treatment test for controlled group

Paired sample statistics					
		mean	N	Standard deviation	Standard error of the mean
Paire 1	A	10,30	40	1,018	,161
	C	10,20	40	,939	,148

Paired samples test									
		Paired differences		95% confidence interval for the difference		t	ddl	Sig. (bilateral)	
		mean	Standard deviation	Standard error of the mean	inferior				Superior
Pair 1	A - C	,100	,709	,112	-,127	,327	,892	39	,378

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Appendix Q: Differences between the post-treatment test for experimental group and the test without applying treatment for controlled group

Paired sample statistics					
		mean	N	Standard deviation	Standard error of the mean
pair 1	B	14,30	40	1,018	,161
	D	11,20	40	,939	,148

Paired samples test									
		Paired differences							
		Moyenne	Standard deviation	Standard error of the mean	95% confidence interval for the difference		t	ddl	Sig. (bilateral)
					inferior	superior			
pair 1	B - D	3,100	,709	,112	2,873	3,327	27,656	39	,000