

A SYSTEMATIC REVIEW OF TECHNOLOGY IN DEVELOPING LISTENING SKILL

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ABSTRACT

Technology's acceptance has created a big impact on the acquisition of new languages, especially on the growth of listening abilities. The ways in which different technological aids improve listening comprehension in educational contexts are examined in this systematic review. 26 peer-reviewed studies were examined in accordance with the PRISMA 2020 recommendations to determine how computer-assisted language learning (CALL) and mobile-assisted language learning (MALL) contribute to the development of listening skills. The results show that technology improves student engagement and comprehension by increasing access to real audio resources, facilitating tailored learning, and promoting collaborative teaching methods. But issues like an over dependence on screens and unequal access to digital tools continue to exist. Therefore, even though technology offers great chances to improve listening skills, a balanced integration with traditional methods of teaching is necessary for maximum efficacy and fair access.

Keywords: *Education, Listening Skill, Podcast, Technology*

BACKGROUND

The proliferation of technology is revolutionizing the language learning scene, presenting students with innovative tools and resources that have a profound impact on the development of listening skills. Along with the developments in technology, it has become an essential tool in improving students' ability to understand and interpret spoken language. By combining technology into language teaching, educators can create more attractive and effectively learning opportunities that meet the diverse needs and preferences of learners in the digital age (Uzun, 2023).

The integrity of technology in language learning offers many benefits for the development of listening skills. One of the main benefits is accessibility to a wealth of original materials, such as podcasts, audiobooks and online news broadcasts, which introduce students to real-world language use and various accents. These materials allow students to practice listening comprehension in the authentic context, thus improving their ability to understand spoken language in a variety of situations. In addition, the technology-enhanced learning platform offers interactive features that allow students to actively engage with the listening materials (TOPAL, 2023).

For example, learners can control the playback speed, pause, rewind and replay audio or video clips as needed, so they can focus on specific elements and improve their comprehension. In addition, technology-

based tools and online platforms provide an opportunity for Personalized Learning, allowing learners to customize their listening practices to their individual needs and preference. The learners can select materials that match their interests, language proficiency level and learning style (TOPAL, 2023).

This new personalized approach leads to a more compelling and effective learning experience, as students are motivated to actively participate in the learning process. In addition, the technology facilitates the collaborative learning, which requires learners to work together on listening activities and discuss their understanding with their colleagues. Through collaborative learning, learners can benefit from diverse perspectives, receive feedback, and develop critical thinking skills (M. Harsha Vardhini, 2023).

However, while technology may offer significant advantages for language learning, it is important to be conscious of its potential challenges and limitations. One of the concerns is the risk of overusing screens, which can negatively impact a learner's overall health. It is important to strike a balance between technology-based learning and traditional face-to-face teaching. In addition, not all students have similar access to technology or the digital literacy skills required to utilize these tools effectively. Therefore, it is important to ensure that adequate support and training is provided to enable all students to benefit from technology-enhanced language learning.

In addition, technology can also be used to assist in assessing students' listening comprehension skills in a more efficient and accurate way. Automatic recognition software, for example, can analyze learners' pronunciation and fluency, providing live feedback and revealing areas that need improvement. This type of judgment can help learners track their performance and identify their strengths and weaknesses, so they can focus on targeted practice. In addition, online language learning programs often include quizzes and tests that assess learners' listening comprehension, providing direct feedback and personalized recommendations for further learning (Saeidi et al., 2021).

In conclusion, technology has been a valuable tool for developing listening skills in language learning. By ensuring access to authentic materials, interactive features, individualized learning opportunities, and collaborative learning experiences, technology can improve learners' understanding and interpretations of spoken language. However, it is important to use technology judiciously and address potential challenges to ensure that it is used effectively to support language learning objectives. As technology evolves, it is vital to explore innovative ways to harness its potential to better enhance listening and create engaging and effective language learning experiences for learners of all ages and backgrounds.

RESEARCH METHOD

The Preferred Reporting Materials for Systematic Evaluations and Meta-Analyses (PRISMA) 2020 standard was utilized for the present systematic literature review. To promote transparency in systematic reviews, 27 of the criteria were incorporated into the PRISMA checklist. Comparative research methods, namely descriptive comparisons, were employed in this extensive review of the literature (Check & Schutt, 2012; Creswell, 2014; Sharp, 2003). This article's goal is to outline and clarify the ways in which technology can be utilized to enhance language learners' listening abilities. This essay also makes a systematic effort to demonstrate how technologies is different from earlier educational tools.

Phase 1: Identification Phases

During this phase of the systematic review, relevant research should be found. There are two main proceedings in this phase. The first step is to collect all of the relevant articles and select the ones that are appropriate based on what are known as inclusion and exclusion criteria. Such studies can exhibit limitations of publication bias. Literature analyzing from sources other than journal Databases, including book chapters, white papers, and technical reports, was not part of this research procedure.

As a result, this study focused on examining peer-reviewed journals as sources. As indicated in Table 1, Google Scholar served as the main database for this study. In addition, the universities used in this particular systematic review were published on 2024. Due to the increased number of scientific articles, today's literature reviews must consider the latest findings to stay updated, as well as the overall direction and achievement of a field of study. In the progress, a number of different headwords were combined. These key words include Technology, listening skill in the classroom, and the use of Technology to improve students' Listening skills.

Table 1. Source of journals

Journal Source	Quantity	Keywords
Google Scholar	38 articles	impact of technology, impact of technology on developing listening skills, impact of technology on developing listening skills in language learning

Phase 2: Screening Phase

As the suitable articles in Google Scholar was chosen, duplicates were discovered and removed within a week. The papers were then re-examined to ensure that the remaining articles met the researcher's requirements.

Phase 3: Eligibility Phase

In the third stage, the selected articles were reviewed for eligibility; they had to match the criteria listed in the inclusion section of table a. This was an essential step to guarantee the reliability and quality of the data that were collected for this study.

Table 2. Inclusion Criteria

Inclusion
Impact Technology in Listening skill
Research methodologies: quantitative, qualitative, and mixed method
Sample or respondent various levels of education
Evaluate Technology in Enhancing Listening Skills
Journal Articles published in 2024

The papers chosen focus on researchers who utilized Technology to enhance Listening skills. The papers were vetted in accordance with the criteria outlined in figure 1

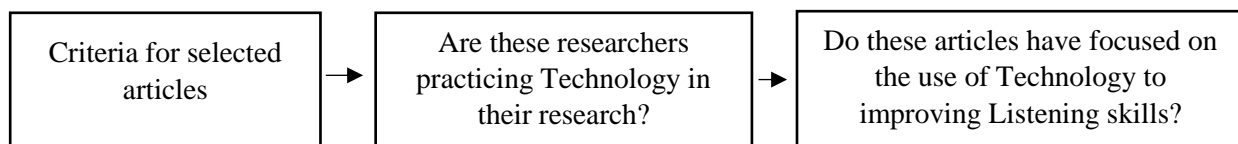


Figure 1. Assessment criterion in choosing articles

Phase 4: Exclusion Phase

After screening the eligible articles in the third stage, the remaining articles were excluded from this systematic literature review. The criteria for excluding articles are stated in Table 3. The elimination step, like the eligibility step, is critical to assure that researchers collect high-quality data.

Table 3. Exclusion Criteria

Exclusion
Technology was not implemented in Listening skill the studies did not access and evaluate Technology Language learning which did not used Technology Articles not published in 2024

There were 38 articles provided information about the role of the impact Technology in developing students' Listening skills. Most of the analyzed articles showed the combination of quantitative, qualitative, Experimental and mixed-method type studies as depicted in Table 4. The respondents from all of the studies included all levels of education from primary until university level.

Table 4. Quantity of journals based on research design

Research Design	Quantity
Quantitative Design	16
Qualitative Design	11
Mixed-Method Design	5
Review of Literature	3
Classroom Action Research (CAR)	2

Figure 2 more clearly shows the detailed Procedure from Stage 1 to Stage 4 based on The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 review checklist in performing this systematic literature review.

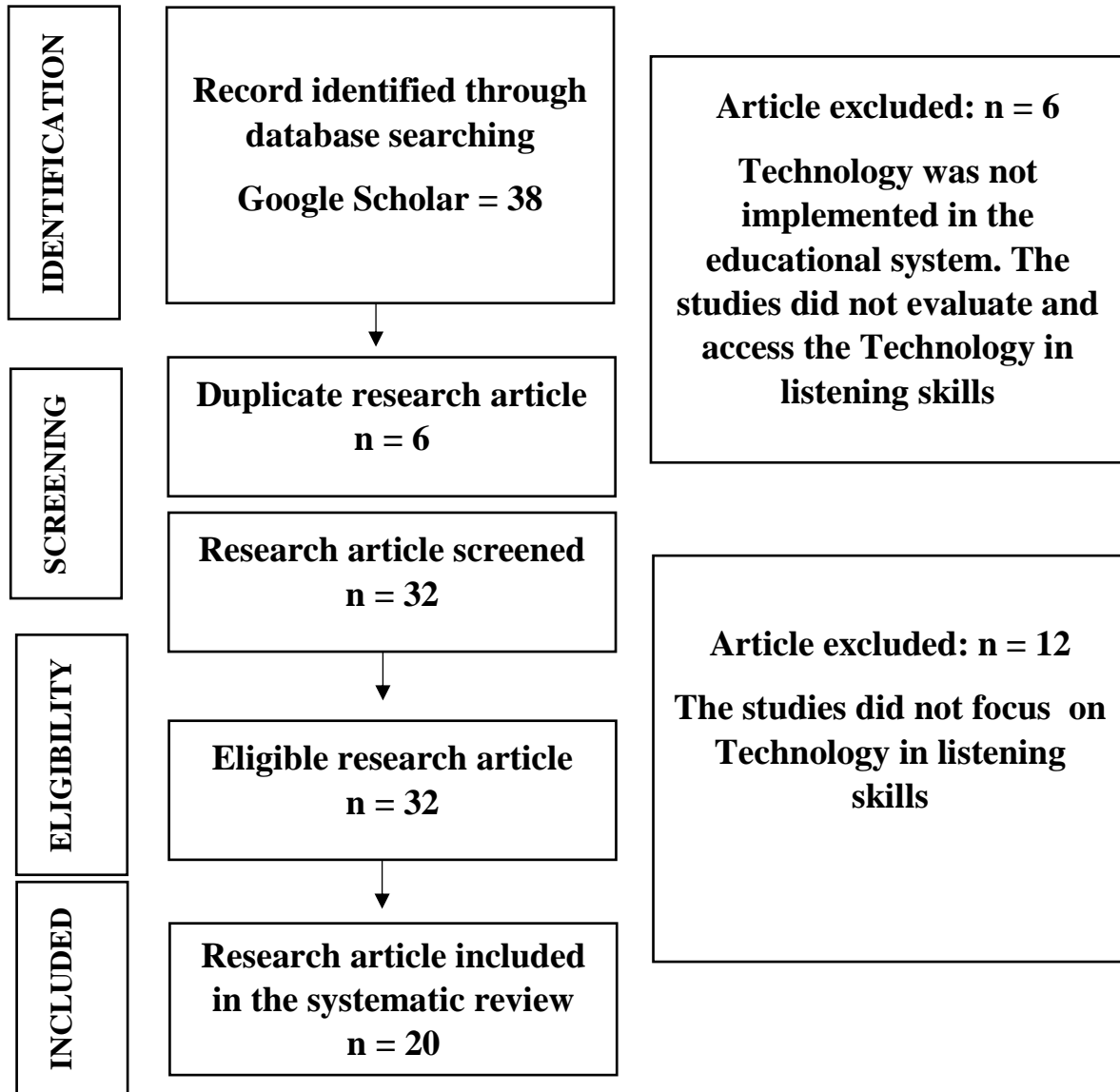


Figure 2. Stream chart of the research article selection process

RESEARCH FINDINGS

In this session, the results of these research findings will be thoroughly reviewed. After four stages of selecting eligible articles for evaluation, ten publications were included in this systematic review due to the nature of the research. The most significant of the many published research articles on technology's ability to improve students' listening skills are listed in Table 5 below.

Table 5. Main Characteristics, Perspectives and perception of using Technology in improving students' listening skills

Authors	Territory	Study Purpose	Participants	Discussion
Abeer Hadi Salih (Salih, 2019)	Baghdad, Iraq.	To investigate the effectiveness of mobile-assisted language learning (MALL) devices in developing listening sub-skills in English language learner	60 second-year students from the English Department at Al Iraqia University, with 30 students in the experimental group and 30 in the control group	Limited research exists on mobile-assisted language learning for listening skills. This study explores the effectiveness of using mobile-assisted language learning devices in developing listening skills and finds a positive impact on both experimental and control groups.
Maria Yu. Lebedeva, (Corresponding author) E.V. Koltakova, Olga N. Khaleeva, M.N. Rusetskaya. (Lebedeva et al., 2017)	Moscow, Russia	To explore the effectiveness of computer-assisted language learning (CALL) in developing non-reciprocal listening skills for students learning Russian as a foreign language.	68 students from 18 different countries, studying Russian as a foreign language at the Pushkin State Russian Language Institute.	This study examines how computer-assisted language learning (CALL) can enhance listening skills in Russian language teaching. The findings suggest that CALL applications are effective in improving listening skills, particularly for details.
Mehrak Rahimi, Elham Soleymani (Rahimi & Soleymani, 2015)	Tehran, Iran.	The purpose of this study is to investigate the impact of mobile learning on listening anxiety and listening comprehension in English as a foreign language (EFL) learners.	50 students from two intermediate English classes.	This study found that using mobile devices for listening activities can significantly reduce anxiety and improve listening comprehension in English language learners.
Hussam Alzieni (Alzieni, 2020)	Dubai	To investigate the positive effects of Mobile-Assisted Language Learning (MALL) on enhancing of students' listening skills.	66 Students in the Foundations program at Dubai Men's College, UAE..	Mobile-Assisted Language Learning (MALL) has a positive impact on English listening skills, according to a study at Dubai

				Men's College. Teachers also support the use of MALL, but more research is needed for conclusive results.
Paiman Azeez, Prof. Dr. Fatimah R. Hasan Al Bajalani. (Azeez & Al Bajalani, 2018)	Zorab Iraq. Kurdistan Region, Iraq.	To explore the effectiveness of Mobile Assisted Language Learning (MALL) in improving the listening skills of students as both an instructional tool.	57 second- year students of Koya University's Faculty of Education. 31 students in experimental group and 26 students in control group.	This study examines the effectiveness of mobile phone-assisted language learning (MALL) in developing listening skills. Pretest-experiment-post-test design shows MALL improves listening skills more significantly than traditional methods.
Hassina Nachoua (Nachoua, 2012)	Biskra, Algeria.	To demonstrate that the implementation of CALL (Computer Assisted Language Learning) is an effective method to enhance students' motivation and their performance in listening skills.	Thirty first-year students at the Faculty of Language and Literature, Mohamed Kheider University.	This paper emphasizes the importance of effective teaching strategies for teaching listening skills, particularly in an EFL context. Research at Mohammed Kheider University demonstrated that Computer Assisted Language Learning (CALL) improved students' motivation and listening skills, making it an efficient and valuable technique.
Galina Kavaliauskienė (Kavaliauskien, 2008)	Vilnius, Lithuania.	To explore the effectiveness of podcasting as a method to improve listening skills among students learning English for Specific Purposes (ESP).	27 first -year students from two different specializations, namely psychology and law, as well as community service activities.	Podcasting enhances listening skills in English teaching, promoting self-evaluation and improvement. Blended learning, combining online listening with

					classroom activities, offers an exciting educational approach.
Dodi Testiana Wijayatiningsih, Charanjit Swaran Entika Prastikawati. (Mulyadi et al., 2021)	Mulyadi, Deni Java, Indonesia.	Semarang, Central Java, Indonesia.	To investigate the effects of technology-enhanced TBLT on ESP students' listening comprehension and speaking practice.	97 ESP students in a Nursing program at Universitas Muhammadiyah Semarang, Indonesia.	The study found that technology-enhanced Task-Based Language Teaching significantly improved English as a Foreign Language (ESP) learners' listening comprehension and speaking performance, but not speaking performance.
Adriana García, Perlaza Rodríguez. (Gracia & Rodriguez, 2021)	Becerra Marjorie	Esmeraldas, Ecuador.	To explore how information and communication technologies (ICTs) contribute to improving the listening skills of fifth grade English language learners at Sagrado Corazón School.	33 fifth-grade students	A study examined the use of information and communication technology (ICT) to develop listening skills in fifth-grade students. The research found that technology had a positive impact on students' attitudes and oral expression. However, it also revealed a lack of teacher training in utilizing these tools effectively.
Mehrak Rahimi and Mozghan Aghabarari (Rahimi & Soleymani, 2015)		Tehran, Iran.	To identify whether using 360° VR videos can increase listening comprehension and to gather students' perceptions of this technology in listening to instruction.	This study included 60 female EFL learners aged 15-16 from a high school in Tehran, Iran.	This study examines the impact of 360° VR videos as part of a pre-listening task on the listening comprehension of English as a Foreign Language (EFL) learners
I Rusdiyana, A D P Salim, A P Ulpah	Tarmawan, Indonesia		To investigate if using podcasts with PAL improves listening skills	This study included tenth-grade students from SMAN 7 Aceh Barat	The study found that using Peer-Assisted Learning (PAL) in Podcasts improved listening

(Tarmawan et al., 2021)		and to explore differences in outcomes between genders.	Daya, consisting of a total of 76 students.	comprehension slightly, but also enhanced students' motivation, with minimal gender differences, making it equally effective for both genders.
Adella Raihani Siti Ikrima, Fahriany, Desi Nahartini (Ikrima et al., 2023)	Jakarta, Indonesia.	To provide evidence on the impact of podcast audio-assisted listening in improving students' listening comprehension.	60 third-semester students from the English Education Department.	The treatment group's median scores increased from 72.07 to 85.53, revealing a considerable development. An average magnitude of impact was suggested by the N-gain score of 56.45%. Podcasts were useful for increasing vocabulary and listening comprehension.
Eka Melati Yessi Ratna Sari Syamsiah Depalina Siregar	Duri Indonesia.	Riau, The purpose of this study was to find out the way podcasts work as a teaching tool to improve student engagement and listening comprehension and of AMIK Mitra Gama third-semester Informatics Management students.	24 third-semester Informatics Management students.	Podcasts significantly improved student involvement and listening comprehension, increasing listening achievement ratings from 66.96% to 68.29% in the second cycle, promoting better understanding through an engaging learning environment.
Ni Made Wersi Murtini (Murtini, 2022)	Mustansiriyah, Iraq	The purpose of this study for figuring out if using podcast apps may help Iraqi EFL students' listening comprehension.	Second stage student at the Department of English, Faculty of Basic Education, Mustansiriyah University, Iraq.	The study found a significant improvement in students' listening abilities with the use of podcasts compared to the control group.
Silmawati Asnawi Muslem Iskandar Abdul Samad	Southwest, Aceh.	The purpose of this study is students know assess how utilizing podcasts with PAL affects	Class X students of SMA Negeri 7 Aceh Barat Daya	The study identified that combining podcasts with PAL improved students' listening skills,

(Silmawati et al., 2018)		students' listening skills. Being aware of how male and female students' learning outcomes differ. use this technique to determine the motivation of kids to learn to listen.	(76 students: 25 boys and 51 girls).	with no significant difference in results between genders, and increased motivation.
(Olena Davydenko, 2021)	Ukraine.	To explore the impact of using BBC Learning English podcasts on the development of listening skills in first-year university students.	12 first-year university students, aged 17–19.	Podcasts improved listening comprehension, student participation, and engagement, with a 1.33 point increase post-test. Students became more confident and involved as they adapted to podcasts.
(Yuni Marsela Septi Nurul Aini Putri Yuliastuti Rizqah Fajar Khardani Didin Nuruddin Hidayat Yatni Fatwa et al., 2024)	Jakarta, Indonesia.	To explore students' perspectives on the effectiveness of English songs and podcasts on Spotify in improving their listening skills and identify which medium is more impactful.	10 first-year students from the Department of English Language Education, UIN Syarif Hidayatullah Jakarta	English songs significantly enhance students' listening abilities, motivation, usability, and enjoyment, while podcasts are less captivating despite their effectiveness.
(Andi Ainun, Munir, Muh. Tahir et al., 2023)	Parangtambung, Makassar, Indonesia.	To determine the effect of podcasts on students' listening skills.	25 students from Class D, 2020 cohort, Universitas Negeri Makassar.	The study found that the mean post-test score (63.63) was significantly higher than the pre-test score (51.76). That is 13 out of 25 students met the minimum passing criteria after using the podcasts. The audio podcasts proved effective in making

					students more engaged and responsive during the listening task.
Lizatria Paulinsyah Marini Damayanti Nabila A'zahra Kosasih (Paulinsyah et al., 2024)	Pagaralam, South Sumatra, Indonesia.	South	To determine the impact of podcasts on students' listening skills.	25 students from Class TKJT 2024 at SMK Muhammadiyah Pagaralam.	The study showed significant improvement in listening comprehension, with mean scores increasing and 13 out of 25 pupils meeting the minimum competency requirement post-test.
Ni Putu Ayu Bella Damayanti, Nyoman Padmadewi, Putu Artini (Putu et al., 2024)	Tabanan, Indonesia.	Bali,	To examine the impact of podcasts on improving students' listening comprehension.	50 eighth-grade students from SMPN 1 Selemadeg, divided into two groups.	The experimental group showed a significant improvement in vocabulary and sentence understanding compared to the control group, indicating the benefits of podcasts in enhancing conversational skills.

DISCUSSION

Many studies have been conducted on the use of mobile-assisted language learning, but research on listening skills is still limited (Salih, 2019). Some researchers have tried to use mobile learning devices to help develop academic listening skills. However, there is little research integrating mobile technology. Interest in research on the effect of mobile-assisted language learning on the development of listening skills is still low. Therefore, this study aims to explore the effectiveness of using mobile-assisted language learning devices in developing listening skills. The study was conducted involving two experimental and control groups, each consisting of 30 second-year students at Al Iraqia University. The results of this study show that the use of mobile-assisted language learning tools has a positive impact on the development of listening skills in both experimental and control groups.

This study investigates the effectiveness of computer-assisted language learning (CALL) in improving non-reciprocal listening skills in the context of learning Russian as a foreign language. While the impact of CALL on listening skills has been extensively studied in other languages, this study is the first to examine its effects specifically in the teaching of Russian (Lebedeva et al., 2017). The study involved 68 Russian as a Foreign Language (RFL) students and 7 teachers from the Russian Language Preparation Department. The students were divided into an experimental group and a control group, and qualitative and quantitative methods were used to assess general information listening and selective listening. Testing and assessment materials were developed, and statistics were collected for each type of listening. Additionally, students in the experimental group were surveyed to gather their experiences with using CALL in the classroom. The findings of this study demonstrate the effectiveness of CALL applications in improving listening skills, particularly for detail skills.

In this study, the impact of mobile learning on EFL learners' listening anxiety and comprehension was examined. Fifty students from two intermediate English courses were chosen for the study, with 25 in the experimental group and 25 in the control group. The students' listening anxiety and comprehension were initially assessed using a questionnaire and the Key English Test (KET) before the study (Rahimi & Soleymani, 2015). Throughout one semester, the experimental group engaged in listening activities utilizing podcasts on mobile phones and portable digital media players, whereas the control group utilized desktop computers for their listening activities. The results revealed a significant decrease in listening anxiety among the experimental group after the experiment. Additionally, there was a notable difference in listening comprehension between the experimental and control groups, with the experimental group showing better comprehension by the end of the experiment. This suggests that mobile learning can have a positive impact on reducing listening anxiety and improving comprehension skills for EFL learners.

Mobile technology, particularly Mobile-Assisted Language Learning (MALL), is rapidly growing in the education field (Alzieni, 2020). This study focuses on the impact of MALL on English listening skills in the Foundations program at Dubai Men's College in the United Arab Emirates. The objective is to assess how much MALL enhances listening skills compared to traditional methods. The study involves 66 students in the experimental and control groups, as well as 20 teachers who provide input. The results show significant differences between the two groups, demonstrating that MALL has a positive effect on improving listening skills. The study emphasizes the potential of mobile technology to provide accessible and convenient learning opportunities, particularly for language development. Some teachers express strong support for the use of MALL. However, further empirical research is necessary to validate the findings and improve their generalizability.

This study focuses on the impact of mobile phone-assisted language learning (MALL) on listening skills, specifically in Kurdistan. While previous research has examined the use of MALL for reading

skills, there is a lack of research on its effectiveness for listening skills, and the integration of computer technology is limited (Azeez & Al Bajalani, 2018). This study aims to address this gap by analyzing the effectiveness of MALL as an instructional tool both in and out of the classroom. The study follows an experimental design, with two experimental groups and a control group comprising a total of 57 second-year students majoring in English Language Education. The results indicate that the use of MALL had a positive impact on the experimental group's listening skill development, outperforming the control group. These findings highlight the potential of MALL as a tool for improving listening skills and suggest the need for further research in this area.

This paper discusses the importance of using effective teaching strategies in teaching listening skills, especially in the context of teaching English as a Foreign Language (EFL). Teaching listening as a skill is difficult, as students often have difficulty in understanding native speakers and cannot function in everyday life situations (Nachoua, 2012). Many students become passive listeners and lack motivation in the classroom. The research conducted at Mohammed Kheider University aimed to demonstrate the effectiveness of Computer Assisted Language Learning (CALL) in improving students' motivation and their listening skills. The study involved 30 first-year students and used CALL and other techniques to improve their listening skills. The results of statistical analysis showed that the experimental group, which was exposed to CALL and visual and audio environments, performed better compared to the control group. The data showed that the experimental group was motivated and active in the learning process. Therefore, this study concludes that computers are a valuable resource for improving students' listening skills, and CALL is an effective and efficient technique.

Listening skills in learning a foreign language have been overlooked, despite their importance in everyday communication (Kavaliauskien, 2008). Podcasting, an online audio publishing method, offers learners extra listening practice both inside and outside the classroom. This paper explores the application of podcasting in teaching English, focusing on learners' perceptions, self-evaluation of their performance, and reflections on improving listening skills. The findings provide insights into developing listening competence and recommend blended learning, combining online listening with classroom audition activities. This approach offers an exciting way for students and educators to explore educational content and improve listening competence.

This study investigates the impact of technology-enhanced Task-Based Language Teaching (TBLT) on English as a Foreign Language (ESP) learners' speaking and listening comprehension. The research involved 97 nursing students and involved online presentations, role-play, online group discussions, and the listening portion of the TOEFL exam (Mulyadi et al., 2021). Results showed that technology-enhanced TBLT significantly improved students' listening comprehension and role-play-based speaking performance. However, speaking performance scores did not significantly improve in online presentations and discussions. The study suggests that combining technology-enhanced TBLT with role-playing in ESP instruction could improve students' speaking skills.

This article discusses the findings of a study conducted to examine the impact of information and communication technology (ICT) on the development of listening skills in fifth grade students (Gracia & Rodriguez, 2021). The study was conducted at the "Sagrado Corazon" School in Esmeraldas in 2019. The research focused not only on students' attitudes but also on their oral expression, and technology was used as a means to facilitate these improvements. The study utilized a qualitative-quantitative approach, collecting a substantial amount of data through observation and surveys. Questionnaires were given to 33 students and four teachers. The results emphasized the limited use of ICT tools in the classroom, indicating a need for further teacher training in order to promote an interactive, dynamic, and effective English teaching and learning process. Overall, the study highlights the potential benefits

of incorporating technology in the classroom and the importance of providing teachers with the necessary skills and support to maximize its impact on students' language development.

This study examines the impact of 360° VR videos as part of a pre-listening task on the listening comprehension of English as a Foreign Language (EFL) learners. The results showed a significant improvement in listening comprehension among students who used VR videos as compared to the control group (Tekin & Parmaksız, 2016).

The study found that students taught using Podcasts with Peer-Assisted Learning (PAL) showed slightly better improvements in listening comprehension compared to those using Podcasts individually, although the difference was not statistically significant (Tarmawan et al., 2021). However, the use of PAL significantly enhanced students' motivation to learn, indicating its positive impact on engagement. Gender differences in listening comprehension outcomes were minimal, suggesting that the approach is equally effective for both male and female students.

The findings of the study, using podcasts increased students' levels of involvement and listening comprehension. From 66.96% in the first cycle to 68.29% in the second, listening achievement ratings rose. Additionally, student involvement increased from 46.67% in the first cycle to 56.67% in the second. Better understanding was promoted by the engaging and participatory learning environment that the podcasts provide (Melati et al., 2020).

The posttest revealed a statistically significant difference between the experimental and control groups. In comparison to the control group, the experimental group's average score rose noticeably. Students' listening abilities have been shown to improve with the help of podcasts (Murtini, 2022).

According to this study, utilizing podcasts in conjunction with PAL is more beneficial than using them alone at enhancing students' listening abilities. Male and female pupils do not significantly differ in their listening learning results. Students who get instruction using both PAL and podcasts are more motivated than those who receive instruction just through podcasts (Silmawati et al., 2018).

The findings of the study, listening comprehension improved with frequent podcast consumption, with a mean increase in post-test scores of 1.33 points over pre-test results. The majority of students responded well to the incorporation of podcasts into their daily learning routine, and student involvement and engagement increased. Data from observations revealed that when students became used to utilizing podcasts, they grew more engaged and self-assured (Davydenko, 2021).

This study found that English songs improved students' listening skills more than podcasts. During the learning process, songs increased motivation, usability and enjoyment (Marsela et al., 2024). Despite their effectiveness, there are some students think that podcasts are not as engaging as music.

Notable progress in listening comprehension. According to post-test data, mean scores increased, and 13 out of 25 pupils met the minimal competency requirement (Paulinsyah et al., 2024).

Compared to the control group (mean post-test score: 55.67), the experimental group showed a significant improvement (mean post-test score: 71.20). Benefits of podcasts include increasing vocabulary and sentence understanding by exposing listeners to a variety of dialects and conversational circumstances (Putu et al., 2024).

CONCLUSION

The studies reviewed highlight the growing impact of technology, particularly mobile and computer-assisted language learning tools, in enhancing listening skills among language learners. A recurring theme across the research is the positive influence of mobile-assisted language learning (MALL) and computer-assisted language learning (CALL) on students' listening abilities. Studies show that both mobile devices and computer applications can significantly improve comprehension, reduce anxiety, and increase motivation, which are essential factors for developing effective listening skills. Despite the limited research on mobile learning's specific impact on listening skills, existing studies provide strong evidence of its benefits in both controlled and experimental settings.

Several studies focus on MALL and CALL applications in various contexts and languages, demonstrating their effectiveness in improving listening skills. For example, research on Russian language learners has confirmed the value of CALL in enhancing non-reciprocal listening skills, particularly in terms of attention to detail. Similarly, studies involving English as a Foreign Language (EFL) learners indicate that mobile learning tools like podcasts can alleviate listening anxiety and enhance comprehension. The integration of technology into the learning environment is thus shown to create more engaging and personalized learning experiences, benefiting students across different proficiency levels.

Furthermore, research on mobile-assisted language learning in specific regions, such as Kurdistan and the UAE, highlights the widespread potential of MALL to enhance listening skills. The results of these studies consistently demonstrate that students using mobile learning tools outperform those relying on traditional methods, emphasizing the need for further research and broader adoption of such tools in language teaching. The findings suggest that mobile learning provides accessible, flexible, and efficient opportunities for language learners to practice and improve their listening skills outside the classroom, further enhancing their language acquisition process.

Additionally, the studies demonstrate the importance of teaching strategies that incorporate technology to address the inherent challenges of developing listening skills. The use of podcasting, blended learning, and 360° VR videos in listening tasks provides additional avenues for practice and skill development. Blended learning, combining online listening activities with in-class discussions, is particularly effective in promoting learner engagement and improving listening competence. These findings underscore the potential of technology to make listening practice more interactive, dynamic, and effective, which is crucial for learners who often struggle with passive listening and real-world communication.

The research collectively reinforces the critical role of technology in improving listening skills in language learning. Mobile technology, computer-assisted learning tools, and innovative methods like podcasting, blended learning, and virtual reality (VR) are all shown to offer substantial benefits. However, challenges remain in fully integrating these tools into language classrooms, especially in regions with limited resources or teacher training. To maximize the effectiveness of these technological tools, further empirical studies are needed, alongside increased efforts to train educators in using these resources effectively. Overall, technology has proven to be a powerful tool in enhancing listening skills and holds great promise for future language education.

In addition, teacher training is crucial for the effective implementation of technology in language learning. Studies have shown that the lack of adequate teacher preparation can limit the positive impact of technological tools. To bridge this gap, institutions should invest in professional development

programs that equip teachers with the necessary skills to integrate technology effectively. This will help ensure that students can reap the full benefits of technology-assisted learning.

In conclusion, technology has proven to be a valuable asset in enhancing listening skills within language education. Tools such as MALL, CALL, podcasts, and interactive platforms have shown positive outcomes in comprehension, motivation, and engagement. However, to achieve the best results, a strategic and balanced approach is needed, integrating these tools alongside traditional teaching methods. Continued research and investment in teacher training and digital access are essential for optimizing the potential of technology and making listening skill development equitable for all learners.

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