DIGITAL TECHNOLOGY AND ENGLISH PRONUNCIATION LEARNING

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Abstract

Digital technology has become an essential component of modern language education. Over the past decade, the integration of mobile applications, artificial intelligence, and speech recognition tools has significantly changed the way learners approach pronunciation practice. This paper examines how mobile-assisted language learning (MALL) and Automatic Speech Recognition (ASR) technologies contribute to improving English pronunciation skills among learners of English as a foreign language. The study analyzes recent academic research and highlights the pedagogical advantages, motivational benefits, and practical challenges associated with digital pronunciation training tools. Findings suggest that applications such as ELSA Speak provide immediate feedback, promote independent learning, and help students improve pronunciation accuracy through repeated practice. However, technological limitations, accessibility issues, and overreliance on automated feedback remain potential concerns. The paper concludes that digital pronunciation tools are most effective when integrated into a balanced learning environment that includes teacher guidance, collaborative practice, and structured classroom activities.

Keywords. MALL; ASR; pronunciation training; English language learning; educational technology; learner autonomy.

Pronunciation is widely recognized as one of the most important components of communicative competence in a second or foreign language. For learners of English, the ability to pronounce sounds accurately and use appropriate stress and intonation patterns is essential for successful communication. Mispronunciation can lead to misunderstanding, reduced clarity, and communication breakdowns. As a result, pronunciation instruction has always been a significant part of language teaching.

Despite its importance, pronunciation has often received limited attention in traditional classroom settings. Teachers may focus more on grammar, vocabulary, or reading comprehension, leaving limited time for systematic pronunciation training. In many classrooms, students practice pronunciation by repeating

words or sentences after the teacher. While such methods can be helpful, they do not always provide sufficient individualized feedback or opportunities for extensive practice.The development of digital technology has opened new possibilities for language learning. Smartphones, tablets, and personal computers have become powerful educational tools that allow learners to access language resources at any time. Mobile-assisted language learning (MALL) has emerged as an innovative approach that enables learners to practice language skills independently outside the classroom environment. One of the most significant technological innovations in this field is Automatic Speech Recognition (ASR). This technology analyzes spoken language and compares it with native speaker models in order to evaluate pronunciation accuracy. When learners speak into a device, the system can identify pronunciation errors and provide corrective feedback immediately. This immediate feedback helps learners notice their mistakes and correct them through repeated practice.

In recent years, various mobile applications have been developed to support pronunciation learning. These applications often include interactive exercises, visual feedback, and gamified elements that increase learner engagement. Among the most popular tools is the ELSA Speak application, which uses artificial intelligence to analyze learners' speech and provide detailed pronunciation feedback. The purpose of this study is to explore the role of digital technologies in improving English pronunciation skills. The paper examines how MALL and ASR-based applications support pronunciation training, discusses their benefits and limitations, and provides recommendations for effective integration in language education.

Many scholars have examined the relationship between technology and pronunciation learning. Research indicates that mobile learning environments create new opportunities for practicing pronunciation in flexible and interactive ways. Mobile-assisted language learning allows learners to practice pronunciation frequently in short sessions. Because smartphones are always available, students can practice while commuting, during breaks, or at home. Frequent exposure to pronunciation exercises helps learners develop stronger phonological awareness and gradually improve speech production. Studies show that learners who use mobile pronunciation applications often demonstrate improvement in both segmental and suprasegmental aspects of pronunciation. Segmental features include individual sounds such as consonants and vowels, while suprasegmental features include stress, rhythm, and intonation patterns. Both are essential for intelligible speech.

Another important advantage of mobile learning tools is the availability of instant feedback. In traditional classrooms, teachers may not have enough time to evaluate every student's pronunciation individually. ASR technology solves this problem by analyzing learners' speech automatically and providing immediate feedback. Applications such as ELSA Speak highlight incorrect sounds, display phonetic symbols, and suggest correct pronunciation models. This detailed feedback allows learners to focus on specific pronunciation problems. As a result, students become more aware of their speech patterns and learn how to adjust them. In addition to improving pronunciation accuracy, digital tools also influence learner motivation. Many applications include game-like features such as progress bars, achievement badges, and daily practice goals. These elements encourage students to practice regularly and track their improvement over time.

However, some researchers also point out potential challenges. Technology-based learning may cause distractions if students use mobile devices for entertainment instead of study. In addition, not all learners have equal access to high-quality devices or stable internet connections.

This research is based on a review of academic studies published between 2015 and 2025. The purpose of the review was to identify how digital technologies influence pronunciation learning outcomes among ESL and EFL learners.

Academic databases such as Google Scholar, Scopus, and educational technology journals were searched using keywords including "mobile assisted language learning," "pronunciation training," "ASR pronunciation application," and "ELSA Speak." After screening the search results, twelve relevant studies were selected for detailed analysis.The selected studies were analyzed using thematic analysis. This approach allows researchers to identify patterns and common themes across multiple sources. The analysis focused on pronunciation improvement, learner attitudes toward technology, motivational factors, and pedagogical implications.

The analysis of the selected studies reveals several important benefits of digital pronunciation learning tools. First, learners who used mobile pronunciation applications showed measurable improvement in pronunciation accuracy. ASR systems helped students identify errors and practice difficult sounds repeatedly until improvement was achieved.

Second, digital learning environments increased learner motivation. Interactive exercises and immediate feedback encouraged students to practice more consistently compared with traditional classroom activities. Third, digital

tools promoted learner autonomy. Students were able to practice independently and focus on their individual pronunciation difficulties. This personalized learning experience helped learners take responsibility for their own progress. Despite these advantages, several challenges were identified. Technical problems such as unstable internet connections, outdated devices, or limited storage space sometimes interrupted learning activities. In addition, excessive dependence on automated feedback could reduce opportunities for human interaction.

Therefore, experts recommend a balanced approach that combines digital technology with teacher guidance and collaborative learning activities.

Digital technology has significantly transformed the way pronunciation is taught and learned in modern language education. The integration of mobile-assisted language learning (MALL) tools and applications powered by automatic speech recognition (ASR) has created new opportunities for learners to practice pronunciation in more flexible, interactive, and engaging environments. These technologies enable students to access pronunciation training anytime and anywhere, which greatly expands learning beyond the traditional classroom setting. The findings of this study demonstrate that digital pronunciation applications can play a crucial role in improving learners' pronunciation accuracy and overall speaking performance. By providing instant and individualized feedback, these tools allow students to identify their pronunciation errors and correct them through repeated practice. In addition, interactive features such as gamification, progress tracking, and personalized exercises increase learner motivation and encourage consistent practice. As a result, students become more confident speakers and develop greater awareness of phonetic and prosodic features of the English language. Another important advantage of digital pronunciation tools is their ability to promote learner autonomy. Mobile applications empower students to take responsibility for their own learning process by allowing them to practice at their own pace and focus on specific pronunciation difficulties. This learner-centered approach not only enhances pronunciation skills but also contributes to the development of independent learning habits that are essential for long-term language acquisition.

In conclusion, digital technology represents a powerful and promising resource for improving English pronunciation learning. When used thoughtfully and in combination with effective teaching strategies, mobile-assisted learning tools can significantly enhance pronunciation development, increase learner motivation, and create more dynamic and learner-centered educational environments.

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