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Enhancing EFL Learners' Pronunciation: A GenAI-Powered Approach to Weak Forms for Students at Arab Open University

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ABSTRACT
Pronunciation is an important aspect in English as a Foreign Language (EFL) learning. However, language learners face difficulties in mastering pronunciation. Language instructors use technology to enhance pronunciation. The advent of Generative artificial intelligence (GenAI) has created several opportunities to improve pronunciation. This study aims to examine the effect of using GenAI on the learning of weak forms among 54 Saudi EFL learners. The study used a quasi-experimental design to achieve its aims. The participants were divided into two groups: the control group and the experimental group. The experimental group used ChatGPT as the primary GenAI tool to practice weak forms pronunciation. The results indicate no significant differences between the control and experimental groups in post-test scores. This finding suggests that while GenAI tools may support learning, their effectiveness in teaching weak forms does not appear to surpass that of traditional methods.

KEYWORDS
Artificial intelligence; pronunciation teaching; weak forms; EFL learning; Saudi Arabia.

INTRODUCTION

Mastering English pronunciation is a goal for many English language learners. It enhances intelligibility and boosts learners' motivation (Shafiee Rad & Roohani, 2024). However, English language learners face many challenges in mastering English pronunciation. In addition, some aspects of English pronunciation are more challenging than others. These difficulties can be attributed to the fact that some aspects of English pronunciation are not available in the learner's mother tongue. In this regard, weak forms, as a suprasegmental feature of English, is not available in Arabic (Alzi'abi, 2017). Therefore, Arab EFL learners face difficulties in mastering weak forms. As a result, Arab EFL learners tend to pronounce function words in their full forms, which may negatively affect naturalness and fluency in spoken English. This structural absence in the learners' first language creates a persistent pedagogical challenge that requires effective instructional support beyond traditional classroom explanation and repetition.

The integration of GenAI in language learning offers several advantages (Law, 2024). For example, GenAI is useful for customizable input, complexity, and instant feedback (Zhang et al., 2024). Also, GenAI tools can enhance student engagement in EFL teaching, improve student learning outcomes, and increase teacher satisfaction. In addition, GenAI can promote autonomy and personalized learning (Agustini, 2023). GenAI tools are useful for teaching and learning pronunciation, as they improve learners' ability to pronounce accurately and speak more proficiently (Dennis, 2024; Morris, 2020; Saleh & Gilakjani, 2012). ChatGPT and similar GenAI systems can serve as supportive tools for pronunciation practice, allowing learners to generate examples, receive explanations, and engage in interactive drilling of target forms, such as weak forms. While ChatGPT does not replace specialized pronunciation software, its accessibility and conversational feedback make it a practical supplementary tool in contexts where learners have limited access to dedicated computer-assisted pronunciation training (CAPT) systems.

Learning to pronounce weak forms is an important aspect of achieving fluency in English (Levis, 2006). However, weak forms in English present significant challenges for EFL learners, particularly in pronunciation and listening comprehension. Many EFL learners experience difficulties in the pronunciation of weak forms. This is because their first languages may not exhibit similar phonological reductions. Teaching weak forms traditionally, such as listen-and-repeat, may not provide students with accurate, immediate feedback. To solve this problem, GenAI can facilitate learning to pronounce weak forms. Some studies have examined the impact of GenAI on teaching and learning pronunciation (e.g., Dennis, 2024; Morris, 2020; Qin & Zhong, 2024; Saleh & Gilakjani, 2012). These studies have shown that GenAI tools can significantly improve pronunciation learning. Previous studies did not examine the impact of GenAI on EFL learners' pronunciation of weak forms. This gap underscores the need to examine how GenAI can be used to improve weak forms pronunciation. Thus, this study aims to examine the extent to which a GenAI intervention significantly improves weak forms pronunciation performance among EFL learners.

LITERATURE REVIEW

Weak Forms in English

In the context of connected speech, the phenomenon of weak forms in English represents a salient aspect of the language's phonological structure. Weak forms, for Crystal (2011), are "one of two possible pronunciations for a WORD" (p. 519). The other pronunciation is called the strong form, which occurs in isolation (i.e., in citation form). Thus, the weak forms are defined as the form "which is the result of a word being UNSTRESSED, as in the normal pronunciation of the word 'of' in cup of tea, and in most other GRAMMATICAL WORDS (Crystal, 2011, p. 519). Accordingly, weak forms are the unstressed variants of certain function words. In English, function words, according to Roach (2009), are words that do not have a dictionary meaning in the way that we normally expect verbs, nouns, adverbs, and adjectives to have, such as auxiliary verbs, determiners, pronouns, prepositions, conjunctions, etc. Furthermore, function words are well-known English words that can be pronounced in two ways: strong and weak forms (Roach, 2009). Thus, function words, which are often one-syllable words and which are usually stressed when they occur in isolation, consequently become unstressed in their weak forms (Akinjobi, 2009; O'Connor, 1980; Roach, 2009). Being unstressed variants of certain function words, weak forms manifest through the utilization of reduced vowel sounds, frequently realized as schwa /ə/ (Roach, 2009). This is because unstressing often results in vowel reduction, which is an established phenomenon in Standard English (Carr, 2019; Crosswhite, 2001). For Roca and Johnson (1999), the "reduction of stressless vowels" is considered "one of the most characteristic traits of English" (p. 315). It must also be noted that several words in English have more than one weak form; for example, and /ænd/ can be /ənd/, /ən/, or /n/ (Crystal, 2009).

The reduction of stressless vowels in weak forms has been observed to contribute immensely to the typical rhythm of Standard English, where there is alternation between stressed and unstressed syllables (Gimson, 1975; Ladefoged & Johnson, 2014; Roca & Johnson, 1999). English is a stress-timed language in which stressed syllables occur at regular intervals, while unstressed syllables tend to be shortened or reduced (Cutler, 2012; Hayes, 2011; Ladefoged & Johnson, 2014; Vedaschi Ozzola, 2025; Yavaş, 2020). This rhythm is achieved, in part, by the use of weak forms. Furthermore, weak forms contribute to the fluidity and pace of communication in rapid connected speech. This is because English speakers tend to reduce function words in rapid speech to articulate content words more clearly and quickly. This reduction, however, does not hinder comprehension, as listeners can infer meaning from context and stressed content words (Roach, 2009). Ashrafova (2024) states that weak forms in English play a critical role in shaping three processes: the rhythm, melody, and overall naturalness of native speech. Therefore, the linguistic significance of weak forms is underscored by their facilitative role in maintaining the prosodic integrity, naturalness, and fluency of spoken discourse. To sum up, the use of weak forms is integral to the rhythm as well as the naturalness of spoken English.

Challenges For EFL Learners

Weak forms in English present significant challenges for English as a Foreign Language (EFL) learners, particularly in pronunciation and listening comprehension. Several factors compound these challenges. These factors are:

1. Phonetic and phonological complexities,
2. Educational and instructional gaps,
3. Cognitive and psychological barriers, and
4. Sociocultural and environmental variables.

Many EFL learners struggle with weak forms because their first languages may not have similar phonological reductions. Consequently, this leads to mispronunciations and misunderstandings in natural speech (Jenkins, 2000). Phonetically, weak forms often involve the schwa /ə/ and consonant reduction. These two elements are not typically present in many learners' native languages (Ashrafova, 2024). Additionally, inconsistencies between English spelling and pronunciation further complicate recognition and production for EFL learners. They frequently rely on orthographic rather than phonological cues (Cutler, 2012; Tamimi, 2024; Tupamahu & Gaspersz, 2024; Zhunussova et al., 2026).

Furthermore, the lack of explicit instruction in weak forms in traditional EFL curricula is a major contributor to EFL learners' difficulties. Many programs prioritize grammar and vocabulary over pronunciation. Accordingly, this prioritization leaves learners unprepared for the realities of connected speech (Ashrafova, 2024; Field, 2010). Also, learners may fail to recognize weak forms in fluent speech due to insufficient exposure to authentic spoken English. This leads to breakdowns in comprehension (Wilson, 2008). Another factor that hinders learners' ability to process weak forms in real-time communication is limited phonological working memory (Tupamahu & Gaspersz, 2024). This factor is related to cognitive constraints.

Furthermore, pronunciation anxiety and low confidence discourage learners from practicing. This, in turn, exacerbates their difficulties (Tupamahu & Gaspersz, 2024). Sociocultural and environmental factors further influence learners' ability to master weak forms. Large class sizes and limited access to technology restrict opportunities for individualized pronunciation practice (Balla & Elmahdi, 2024). Additionally, first language interference affects learners' ability to adopt English rhythm and intonation patterns. According to Qader et al. (2024), this makes weak forms particularly challenging.

To sum up, four major factors contribute to EFL Learners' challenges with weak forms in both pronunciation and listening comprehension. These are phonetic and phonological complexities, educational and instructional gaps, cognitive and psychological barriers, and sociocultural and environmental factors.

Teaching Pronunciation

Pronunciation is a vital component of language for effective communication (Nguyen et al., 2025). Furthermore, it is integral to communicative competence because it affects both the speaker's ability to convey messages and the listener's ability to understand them (Takidze,

2024). Accordingly, it significantly impacts learners' intelligibility and communicative competence (Bouchhioua, 2017; Khan, 2020; Kazu & Kuvvetli, 2023; Wang et al., 2024). According to Schmitt (2002), pronunciation is a term that "is used to capture all aspects of how we employ speech sounds for communication" (p. 219). It is an important aspect of language learning, as it enables the learner to understand native speakers and native-like speakers appropriately. Thus, it is required for communication and meaning-making (Schmitt, 2002; Zouaidi, 2024).

"Pronunciation teaching has historically relied on traditional methods. These methods include phonetic drills and repetition-based exercises that emphasize accuracy through structured practice (Kusz & Pawliczko, 2022). However, with advancements in digital technology, technology-enhanced learning has emerged as a powerful complement to conventional approaches. This is due to its advantages of offering interactive, personalized, and flexible pronunciation training (Gorjian & Arvand, 2022). While traditional techniques provide foundational skills, technology-based tools—such as speech recognition software, computer-assisted pronunciation training (CAPT), and mobile-assisted language learning (MALL)—introduce dynamic ways to practice and refine pronunciation in real time (Yan & Li, 2019). Both traditional and technology-enhanced approaches are used to teach pronunciation. However, each approach has its strengths and its limitations.

Traditional Approaches

The emphasis of traditional methods of teaching pronunciation was on structured, teacher-led instruction. Therefore, these methods often rely on repetition and explicit phonetic training. One common technique is phonetic drills, such as minimal pair exercises, in which learners distinguish between similar sounds (e.g., "ship" vs. "sheep") to improve accuracy (Kusz & Pawliczko, 2022). Additionally, the International Phonetic Alphabet (IPA) is frequently employed to help learners visualize and reproduce sounds correctly. Traditional approaches also incorporate reading aloud, tongue twisters, and transcription exercises to reinforce pronunciation through consistent practice (Kusz & Pawliczko, 2022). Classroom-based instruction remains central, and teachers provide direct feedback and correction (Nazarova, 2024). Traditional approaches to teaching pronunciation provide techniques that establish a strong foundation. However, they have limitations. Their focus on repetition and imitation can leave learners without an understanding of the underlying phonetic rules, making it difficult to apply these skills in real-life situations. Thus, applying these skills in real-life situations becomes difficult for learners. These methods lack contextual learning because of isolating sounds from their communicative context. This isolation can hinder learners' ability to apply pronunciation skills in real-life situations (Wang et al., 2024; Zouaidi, 2024).

Furthermore, traditional methods often lack flexibility and engagement (Zouaidi, 2024). According to Darcy (2018), repetitive drills can be monotonous; therefore, they reduce student motivation and engagement, two features that are essential for effective learning. Furthermore, traditional approaches may not address individual learners' needs or leverage

advances in psychology and technology (Zouaidi, 2024). Additionally, traditional methods often neglect suprasegmental features, focusing instead on segmental features (individual sounds) rather than on suprasegmental features (intonation, stress, rhythm), which are vital for natural-sounding speech (Goodwin, 2012). Thus, their effectiveness is limited to fostering accurate pronunciation skills in language learners.

Computer-Assisted Pronunciation Training

The integration of technology in pronunciation instruction provides learners with diverse tools and methods to improve their pronunciation skills. These digital tools often outperform traditional teaching methods by providing interactive, personalized, and adaptive learning experiences. Thus, it can be argued that pronunciation instruction has been transformed by advances in digital tools.

Several tools and approaches in Technology-Enhanced Pronunciation Learning have been introduced. Computer-Assisted Pronunciation Training (CAPT) is one of these tools. Gorjian and Arvand's (2022) study refers to PRAAT software as CAPT and describes that it enables learners to analyze speech waveforms, pitch, and intonation in real time. Thus, it provides precise feedback on pronunciation accuracy. In their review of CAPT technology, Amrate & Tsai (2024) discuss its potential to innovate pronunciation training. This is because CAPT systems often employ listen-and-repeat and read-aloud activities. Therefore, they provide learners with structured practice opportunities. AI-powered tools, such as speech recognition technology, have been effective in improving pronunciation and speaking skills among EFL learners (Dennis, 2024; Nur Ardini et al., 2024). For example, Siri is one of the intelligent mobile assistants used today to help EFL learners improve their pronunciation (Alharthi, 2024). To give another example, apps like ELSA Speak and Duolingo (which integrate speech-recognition technologies) allow learners to practice and receive instant feedback, enhancing self-correction (Yan & Li, 2019). Various studies have been conducted asserting that the ELSA Speak application effectively improves students' English pronunciation skills (Almutairi & Alghammas, 2025; Anggraini, 2022; Elsani et al., 2023; Indari, 2023; Kholis, 2021; Miladiyenti et al., 2022; Nguyen & Tuyên, 2024; Sholekhah & Fakhrurriana, 2023; Syabina & Hz, 2024). Furthermore, these AI-powered tools offer personalized feedback and enable learners to practice pronunciation at their own pace (Dennis, 2024). Additionally, Automatic Speech Recognition (ASR) technology is one of the Technology-Enhanced Pronunciation Learning approaches. Aljabr's study (2025) examines the role of ASR technology, alongside peer feedback, in the English language (EFL) pronunciation and speaking skills of adult Saudi learners. It improves learners' pronunciation and speaking skills (Aljabr, 2025). According to Miladiyenti et al. (2022), "Using ASR technology positively influences students' learning habits by enabling them to improve their pronunciation skills outside of class and enhance their social and relationship awareness with peers, all without their teachers present." (p. 228). In conclusion, incorporating technology into pronunciation teaching provides students with various tools and methods, including CAPT, AI-powered applications, and ASR, to enhance their pronunciation skills.

GenAI in Learning Weak Forms

Recent studies have shown the positive effects of artificial intelligence (AI) and Computer-Assisted Pronunciation Training (CAPT) in advancing learners' abilities to pronounce accurately and speak more proficiently (Dennis, 2024; Morris, 2020; Saleh & Gilakjani, 2012). Thus, the use of GenAI tools in various studies has demonstrated significant improvements in pronunciation accuracy (e.g., Alharthi, 2024; Dennis, 2024; Dja'far & Hamidah, 2024; Mohammadkarimi, 2024; Noviyanti, 2020; Rad & Roohani, 2024; Shafiee Rad & Roohani, 2024). and speaking skills (Dennis, 2024). Furthermore, they boost learners' confidence and engagement (Aljabr, 2025; Mohammadkarimi, 2024); they provide immediate feedback for self-correction (Dennis, 2024; Dja'far & Hamidah, 2024). Additionally, learners exhibit a positive attitude toward the GenAI application (Nguyen et al., 2025; Shafiee Rad & Roohani, 2024). Liu and Quan (2022) proposed an AI-based recognition method that uses big data and the Hidden Markov Model (HMM) to identify pronunciation errors and provide personalized feedback, thereby significantly reducing error rates. Similarly, Alharthi (2024) found that using Siri, a voice assistant, alongside in-class instruction led to greater improvements in pronunciation skills than traditional methods. Nur Ardini et al. (2024) examined the AI-powered mobile application Jonglish, which employs Natural Language Processing (NLP) for pronunciation training, and reported high accuracy in spelling checks and successful translations. The effectiveness of AI-powered Speech Recognition Technology (AISRT) has also been highlighted. Dennis (2024) and Dja'far and Hamidah (2024) both reported significant improvements in pronunciation skills among EFL learners using AISRT programs, with positive feedback from participants. Indari (2023) and Kholis (2021) explored the use of the ELSA Speak application, finding that it effectively identified and corrected pronunciation errors, provided valuable feedback, and improved students' pronunciation skills.

However, the above-mentioned studies deal with GenAI and pronunciation in general (i.e., without specifically addressing weak forms). To the best of our knowledge, no study to date has focused on GenAI and its application to specific features of spoken English, namely the correct use of weak forms by foreign language learners. To fill this gap, the current study aims to examine the use of Artificial intelligence in promoting weak forms of pronunciation among foreign language learners.

ChatGPT was selected as the GenAI tool in this study primarily due to its widespread popularity, ease of access, and availability to all students, which makes it a practical and scalable option for educational use. Unlike specialized pronunciation tools such as ELSA Speak, PRAAT, or ASR-based applications designed for phonetic analysis and real-time speech feedback, ChatGPT is a general-purpose artificial intelligence tool that is freely available and widely accessible, and is already familiar to many learners. This allows the study to examine the pedagogical potential of a commonly used GenAI platform in supporting language learning in real classroom contexts, particularly in settings where access to specialized pronunciation software may be limited or inconsistent.

Research Questions

RQ1. To what extent does a GenAI instruction enhance learners' weak forms pronunciation performance, as evidenced by differences between pre-test and post-test results in experimental and control groups?

RQ2. How does exposure to GenAI instruction influence learners' pronunciation accuracy when compared with those who do not receive the intervention?

RQ3. What impact does an GenAI instruction have on the development of learners' overall pronunciation proficiency across experimental and control conditions?

Hypotheses

H1. There is a statistically significant improvement in learners' weak forms pronunciation performance in the experimental group exposed to the GenAI instructional intervention compared to the control group.

H2. Learners who receive the GenAI instructional intervention demonstrate significantly higher pronunciation accuracy than those in the control group.

H3. The GenAI instructional intervention results in significantly greater gains in overall pronunciation proficiency for the experimental group than for the control group.

METHODOLOGY

Research Design

This study employed a quasi-experimental research design involving EFL learners at a Saudi University.

Study Sample

The participants were selected from two classes, comprising 54 students. The sample size was determined by the actual enrollment in the available intact classes offering the English phonetics course at the university during the study period. The sample comprised 28 students in the control group and 26 in the experimental group; all participants were EFL learners at the same institution. The division into an experimental group and a control group was based on existing class organization rather than individual random assignment, to avoid disrupting the normal teaching schedule and institutional requirements. One intact class was assigned to the experimental group, and the other to the control group, to ensure ecological validity and minimize administrative interference. The participants were undergraduate EFL students enrolled in an English phonetics course. All students were native Arabic speakers learning English as a foreign language. Appropriate ethical protocols were followed, including obtaining informed verbal consent from participants, anonymizing individual student data, and ensuring that the GenAI intervention did not compromise the educational integrity of the phonetics course.

Instrument

Pronunciation Test

In the present study, 20 short sentences containing words that can be pronounced in weak forms were used to assess students' pronunciation of weak forms (See Appendix A). These words were used in sentences and can be pronounced in their weak forms. For example, the word “them” in the sentence “Leave them here” can be pronounced as /ðəm/. The test was devised by the researchers based on common weak forms patterns in English phonology and aligned with the content of the phonetics course. To ensure validity, the instrument was reviewed by experts in applied linguistics, who evaluated the items for appropriateness, clarity, and alignment with the construct of weak forms pronunciation. Their feedback confirmed that the test adequately represented the targeted pronunciation features. During the experiment, the participants were asked to read a list of sentences and record themselves using their mobile devices. After recording, the students were instructed to send the recorded audio files to the instructors for evaluation. To clarify the testing process, each student was required to submit two audio files containing the pronunciation of all 20 sentences. These files corresponded to different stages of the study, including the pre-test and post-test. The pretest was administered before the treatment to establish the students' baseline proficiency, while the posttest was administered after the training to assess their progress.

Scoring and Evaluation Method

The instructors evaluated the recordings based on specific criteria, focusing on the accuracy of weak forms. Each correctly pronounced word was awarded one point, while incorrectly pronounced words received zero points. Thus, the maximum score for each test was 20 points. To maintain reliability, the study recruited two raters who were experts in English phonetics. Both raters independently scored each participant's pronunciation to reduce variation in individual judgment. Inter-rater reliability was assessed using Cohen's Kappa coefficient, which in this study was .83.

GenAI-Assisted Tool

ChatGPT was the primary GenAI tool used in this study. Students in the experimental group were asked to use ChatGPT on their mobile phones to practice several sentences that contain weak forms of words. Students in the control group practiced the same content under their instructor's guidance in a traditional way, such as listen-and-repeat.

Research Procedure

The study followed a quasi-experimental approach with pre- and post-tests. In the first session, all the participants were requested to read aloud and record the 20 sentences. This test was considered a pre-test to assess their prior knowledge of weak forms pronunciation before the treatment. In the second session, the participants were divided into two groups: a control group (N=28 students) and an experimental group (N=26 students). The control group received traditional instruction in weak forms pronunciation through conventional classroom teaching methods, focusing on phonetic rules and using a repetition strategy.

In contrast, the participants in the experimental group were trained using ChatGPT. They were instructed to use ChatGPT to practice and refine their weak forms pronunciation skills. Students in this group were guided on using ChatGPT to practice weak forms and receive feedback. The experimental group was trained using ChatGPT as an GenAI learning tool to support autonomous pronunciation practice. Students interacted with ChatGPT through voice prompts, reading aloud sentences containing targeted weak forms and requesting feedback using instructions such as: "Listen to my pronunciation and give feedback on correct weak forms usage in these sentences." ChatGPT then provided voice-based responses and explanatory feedback on the use of weak forms to guide learners' practice and self-correction. At the end of session 2, a post-test identical to the pre-test was administered to both groups.

Data Analysis Procedures

To comprehensively address the research question posed in this study, the data analysis was conducted using three stages. First, descriptive statistics were computed. In this stage, students' pronunciation test scores from the pre-test and post-test in both the experimental and control groups were analyzed. Second, assumption tests were conducted to ensure the suitability of parametric tests. These included tests of normality and homogeneity of variance. Finally, hypothesis testing was conducted using an independent Samples t test to examine the statistical significance of differences between the experimental and control groups after the intervention. In addition, Partial Eta Squared (η^2) was calculated to determine the magnitude of the effect size. Statistical significance was set at $p < .05$, with a 95% confidence interval. All statistical analyses were performed using IBM SPSS Statistics (Version 27).

RESULTS

This study examined the impact of using GenAI in learning the pronunciation of weak forms. The study compared the scores of participants divided into two groups: control and experimental.

RQ1. Weak Forms Pronunciation Performance

To examine the extent to which GenAI instruction enhances learners' weak forms pronunciation performance, an independent-samples t-test was conducted to compare pre-test and post-test scores between the experimental and control groups.

Table 1.

Descriptive analysis

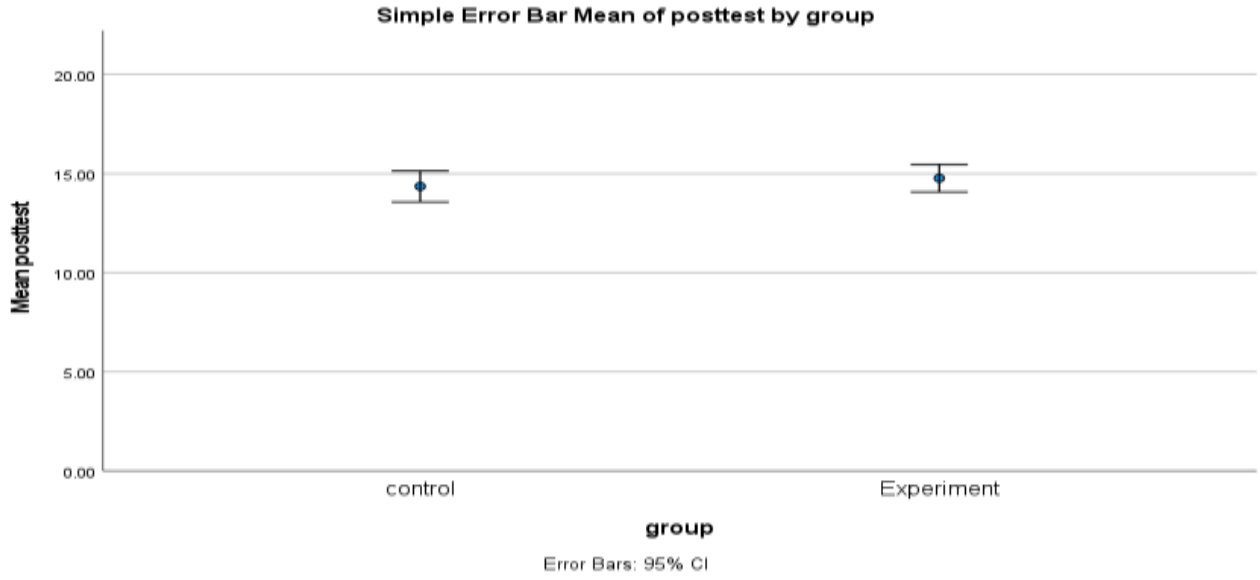
	Group	*N*	Mean	Std. Deviation	*t*	Sig.	95% Confidence Interval of the Difference		Cohen's *d*
Pretest	Control	28	9.00	1.63	-.28	.78	-1.25	.948	
	Experiment	26	9.15	2.36					
post-test	Control	28	14.35	2.02	-.80	.42	-1.44	.618	1.88
	Experiment	26	14.76	1.72					

Table 1 presents the results of an independent-samples t-test comparing control and experimental group performance on both pretest and posttest scores. For the pretest, there was no significant difference between the control group (M = 9.00, SD = 1.63) and the

experimental group (M = 9.15, SD = 2.36), t(52) = -.28, p = .78, 95% CI [-1.25, .95], suggesting that the two groups were equivalent before the treatment. For the post-test, the experimental group (M = 14.76, SD = 1.72) scored slightly higher than the control group (M = 14.35, SD = 2.02), but the difference was not statistically significant, t(52) = -.80, p = .42, 95% CI [-1.44, .62]. However, the effect size was moderate (Cohen's d = .34), suggesting a small to moderate practical difference. This suggests that although the GenAI-supported group showed improved performance in weak forms pronunciation, the improvement was not strong enough to reach statistical significance with the current sample size. The post-test results are shown in Figure 1.

Figure 1.

Results of the post-test



RQ2. Pronunciation Accuracy

Regarding pronunciation accuracy, the post-test comparison showed that the experimental group obtained slightly higher mean scores than the control group. However, the difference did not reach statistical significance, indicating that exposure to GenAI instruction did not produce a measurable advantage in pronunciation accuracy over traditional instruction within the study period.

RQ3. Pronunciation Proficiency

Regarding pronunciation proficiency, post-test results indicate a slight improvement in the experimental group. Nevertheless, the difference between the two groups remained statistically nonsignificant. This implies that while GenAI instruction may contribute to gradual improvements in learners' pronunciation proficiency, the observed gains were insufficient to demonstrate a significant effect relative to conventional teaching methods.

DISCUSSION

The present study examined whether GenAI would significantly improve weak forms pronunciation performance compared to traditional instruction methods. The results reveal

that GenAI did not produce a statistically significant difference in weak forms pronunciation performance between the experimental and control groups. Although the experimental group achieved a higher mean post-test score than the control group, the difference did not reach statistical significance.

The lack of statistical significance may be attributable to several factors. First, the modest sample size likely limited statistical power. Even when meaningful differences exist, smaller samples may fail to detect them as statistically significant, which is a plausible concern given the present study's enrollment of 54 participants.

Second, the intervention period may have been too brief to yield measurable group differences. Pronunciation improvement, particularly for complex features such as weak forms, requires substantial practice and time for automatization. Pronunciation skills develop gradually, and longer exposure to GenAI tools may be necessary before significant gains emerge.

Third, the assessment instrument may have constrained the range of observable outcomes. If its sensitivity or score range was limited, both groups may have approached performance ceilings, making it difficult to differentiate between instructional methods. It is also possible that traditional pronunciation instruction is already sufficiently effective for teaching weak forms, leaving little room for GenAI to demonstrate superior performance.

Finally, individual variability among learners may have masked group-level differences. Students respond differently to GenAI than to traditional instruction depending on their learning preferences, technological aptitude, and specific pronunciation difficulties. This heterogeneity could have obscured overall group effects, with some learners benefiting substantially while others showed minimal improvement.

Yet, beyond these methodological explanations, an important pedagogical consideration should also be acknowledged. The findings may suggest that ChatGPT, as implemented in this study, is not an optimal tool for teaching specific pronunciation features, such as weak forms. Unlike dedicated computer-assisted pronunciation training (CAPT) systems, ChatGPT does not provide explicit phonetic modeling, real-time auditory feedback, or precise articulation correction, all of which are essential for effective pronunciation instruction. This limitation may have reduced its ability to produce distinct gains compared to traditional teaching methods.

This finding is in line with results from some previous studies. For example, Chen et al. (2020) found that while AI interventions can be effective, their advantages over conventional teaching methods may not always be significant or consistent across all learning contexts. In contrast, the findings of the current study do not support earlier studies that suggest AI and CAPT can enhance pronunciation skills through personalized feedback, structured practice, and real-time correction (Amrate & Tsai, 2024; Dennis, 2024; Gorjian & Arvand, 2022). On the other hand, most of these studies focus on general pronunciation skills rather than specific features such as weak forms.

Regarding pronunciation accuracy, the findings indicate that the experimental group achieved slightly higher post-test scores than the control group; nonetheless, this difference

was not statistically significant. This suggests that GenAI-assisted instruction did not lead to a measurable improvement in learners' pronunciation accuracy compared to traditional teaching during the study period. One possible explanation is that pronunciation accuracy requires sustained corrective feedback and long-term practice, which may not be fully achieved within a relatively short intervention. In addition, both groups may have benefited from similar instructional input, which reduced the likelihood of observing a clear advantage for the experimental group. It is also possible that learners' errors in pronunciation accuracy are more resistant to short-term technological intervention and require more intensive, individualized corrective training than what was provided in the study.

Regarding overall pronunciation proficiency, the results similarly showed a slight improvement in favor of the experimental group, although the difference between the two groups remained statistically non-significant. This indicates that while GenAI-assisted instruction may have contributed to gradual developmental gains, it did not produce a strong enough effect to outperform traditional instruction within the duration of the study. Pronunciation proficiency is a complex, multi-dimensional skill that develops incrementally through repeated exposure, practice, and feedback, which may explain the limited observable impact. Furthermore, the relatively short intervention period and possible variability in learners' engagement with the AI tools may have reduced the consistency of outcomes. These findings suggest that GenAI may serve as a supportive supplement rather than a standalone driver of pronunciation proficiency development, particularly in short-term instructional settings.

Furthermore, the findings of the present study can be better understood when viewed in light of previous research on weak forms and pronunciation learning. Weak forms are closely tied to suprasegmental features such as stress, rhythm, and connected speech processes (Roach, 2009; Ladefoged & Johnson, 2014). These features are inherently complex and often difficult for EFL learners to acquire due to their reduced and context-dependent nature. This supports the current findings, as the lack of significant improvement may reflect the well-documented difficulty learners face in mastering weak forms, even with instructional support. In addition, prior studies (e.g., Ashrafova, 2024; Field, 2010; Jenkins, 2000) emphasize that insufficient exposure to authentic connected speech and limited explicit instruction contribute to persistent difficulties for learners. This aligns with the present results, suggesting that short-term GenAI intervention may not sufficiently address these deeply rooted challenges.

At the same time, the current findings partially contradict the broader body of research on GenAI pronunciation learning, which generally reports significant improvements in learners' pronunciation skills (Alharthi, 2024; Dennis, 2024; Nguyen et al., 2025). A possible explanation for this discrepancy lies in the present study's specific focus on weak forms rather than on general pronunciation. Unlike segmental features, weak forms require sensitivity to stress patterns, reduction, and speech rhythm, which general-purpose AI tools may not effectively target. Therefore, while previous studies demonstrate the effectiveness of AI in improving overall pronunciation, the present study suggests that these benefits may not automatically

extend to more nuanced phonological features, such as weak forms. This indicates a need for more specialized, prosody-focused AI tools that explicitly address connected speech phenomena.

Pedagogical implications

The findings suggest that GenAI implementation in pronunciation instruction may hold promise, even though the current study did not demonstrate statistical superiority. The moderate effect size indicates that students in the GenAI group showed meaningful improvements that could translate into real-world pronunciation benefits. Several factors may explain why the intervention showed practical but not statistical significance. For example, GenAI may provide more consistent feedback, allow for repeated practice opportunities, and offer personalized learning experiences that benefit some learners more than others. The technology may be particularly effective for certain types of pronunciation challenges or learning styles.

CONCLUSION

While GenAI use in this study did not demonstrate a statistically significant differential improvement in weak forms pronunciation performance, the moderate effect size suggests practical benefits that merit further investigation. The results indicate that GenAI pronunciation instruction may be a valuable pedagogical tool, even if its superiority over traditional methods requires larger studies to establish definitively. Educators and researchers should consider both statistical and practical significance when evaluating the potential of GenAI in language learning. The findings contribute to the growing body of research on technology-enhanced language learning while highlighting the complexity of demonstrating the effectiveness of interventions in educational settings.

Limitations and Future Directions

The study's limitations include the modest sample size and a single-outcome focus on weak forms pronunciation. Future research should consider larger sample sizes to increase statistical power, longer intervention periods to allow for more substantial learning gains, and multiple measures of pronunciation to capture the full range of potential benefits. Additionally, examining individual difference factors such as prior technology experience, learning preferences, and baseline pronunciation abilities could help identify which students benefit most from GenAI instruction. This could inform more targeted implementation strategies.

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APPENDIX

Read the following sentences.

1.	Wait for the end.
2.	Eat an apple.
3.	Which did he choose?
4.	Ask her to come.
5.	Write us a letter.
6.	Leave them here.
7.	You like it, do you?
8.	I am looking at the wall.
9.	Thanks for sharing.
10.	He travels from London.
11.	Time to eat.
12.	We ate fish and chips.
13.	It's good but expensive.
14.	He could do it.
15.	Which has been best?
16.	I should forget it.
17.	When does it arrive?
18.	Here are the plates.
19.	The papers were late.
20.	You must eat more.