

AI-Enhanced Language Learning: The Impact of Talkpal.AI on EFL Undergraduate Students' English-Speaking Skills

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ABSTRACT

This study was conducted to investigate the effectiveness of Talkpal.AI in improving fluency, pronunciation, vocabulary, and grammar among 40 pre-intermediate English as a Foreign Language (EFL) students in Kuwait. The participants were informed of the research objectives and implementation. A pretest-posttest design was used within a quasi-experimental design. Statistical analysis showed that students made significant improvements in posttest fluency, pronunciation, vocabulary, and grammar ($p < 0.05$). While the study's limitations include sample size and lack of sample diversity, this finding emphasizes the potential of AI technologies such as Talkpal.AI in supporting and advancing language learning for EFL students

Keywords: EFL, fluency, grammar, pronunciation, speaking skills, Talkpal.AI, vocabulary

INTRODUCTION

English has become an important global language with significance in business, intercultural communication, and education (Crystal, 2003). For English as a Foreign Language (EFL) students, developing speaking skills is essential because it reflects their ability to communicate in a foreign language (Nazara, 2011). According to Ilham et al. (2024), key components of speaking skills are

comprehension, grammar, vocabulary, pronunciation, and fluency. Fluency and accuracy are both crucial for communication in language learning (Brown & Lee, 2015). However, EFL students often face challenges in terms of proficiency in spoken English because of mispronunciation, limited *lexis*, and interference from their native language (Qayyum et al., 2024).

The integration of artificial intelligence technology can offer valuable solutions. Artificial intelligence technologies can increase student engagement with interactive and captivating learning experiences (Holmes et al., 2019). AI tools are particularly effective in enhancing speaking skills (El Shazly, 2021). For example, Talkpal.AI utilizes an AI-powered voice chatbot to enhance the English-speaking skills of EFL undergraduate students, similar to other chatbots that engage in human-like conversations (Kaplan, 2016).

Although numerous studies have been conducted on chatbots, a limited number of studies have explicitly focused on the impact of Talkpal.AI on English-speaking skills. Although the growing need for teaching English-speaking in ESL/EFL contexts has become more evident (Iman, 2017), the effectiveness of chatbots in this area has not been thoroughly investigated. Therefore, the following research question is posed:

What impact does Talkpal.AI have on EFL undergraduate students' English-speaking fluency, pronunciation, vocabulary, and grammar?

LITERATURE REVIEW

The incorporation of artificial intelligence (AI) into education has been a focus of growing research interest in recent years, especially in the field of language learning. AI presents unique opportunities to personalize learning experiences and provide real-time feedback and adaptive learning paths. In the context of English as a Foreign Language (EFL), AI-driven tools have shown promising potential for enhancing various language skills, particularly speaking proficiency (Adamopoulou & Moussiades, 2020).

Over the past decade, AI-based tools have been developed to help students learn key language skills including speaking. Tools such as Talkpal.AI, Duolingo, and Rosetta Stone employ algorithms to monitor learner engagement and provide tailored feedback, ensuring a tailored learning experience (Godwin-Jones, 2023). Many of these tools have employed speech recognition technology which allows the software to provide immediate feedback on pronunciation and fluency, giving learners improved autonomy over their speaking skills (Kessler, 2020). Moreover, conversational AI models such as ChatGPT and Replika mimic real-life interactions, allowing learners to practice speaking in a stress-free environment (Huang et al., 2022). These advances demonstrate the ability of AI to tackle persistent challenges in language education, such as inadequate access to native speakers and the requirement for personalized feedback.

A key contribution of AI to language learning is its potential to provide real-time and accurate feedback. For example, ELSA Speak and Speechling platforms utilize advanced speech recognition and natural language processing (NLP) technologies to assess learners' pronunciation, intonation and grammar (ELSA Speak, 2024; Speechling, 2024). In addition to identifying errors, these systems also offer corrections, similar to a human tutor (Li et al., 2021). Moreover, 'adaptive' learning systems (e.g. Knewton and Busuu) use AI technologies to track learners' progress and tailor the complexity of exercises to keep them optimally engaged and retain (Holmes et al., 2019). While these tools do provide a lot of benefits, they also have limitations— for instance, struggling to understand regional accents or providing culturally relevant feedback— which can limit their effectiveness in specific contexts (Warschauer & Xu, 2024).

The future of AI in language learning seems bright, with new developments like AI-powered virtual reality (VR) and multimodal learning systems gaining traction. VR platforms simulate real-world situations to help learners practicing speaking, such as ordering food in a restaurant or attending a job interview (Lan, 2021). Concurrently, large language models (LLMs), e.g. GPT-4, are being integrated within language learning applications to provide personalized feedback, create dynamic and context-sensitive interactions (Huang et al., 2022). Nevertheless, it is crucial to strike a balance between AI-based tools and human engagement as human interaction is still needed to build cultural competence and emotional intelligence (Blake, 2013). By addressing these concerns and utilizing key strengths of AI, educators and developers can create more effective language learning programs.

The development of speaking fluency in a second language is a complex process which involves linguistic competence and psychological factors, such as motivation and confidence. AI-powered applications, such as Talkpal.AI, enable learners to engage with AI and receive instant and targeted feedback on pronunciation, fluency, and grammar. These tools help overcome the limited practice opportunities that students often face, since they can practice without the stress of real-world interactions (Talkpal.ai, n.d.). As El Shazly (2021) found, students who utilized AI-based speaking tools over an eight-week period showed significant improvement in fluency, including reductions in hesitations and pauses during speech generation.

Pronunciation is a crucial aspect of speaking proficiency, and the positive impact of AI has been acknowledged in helping users with challenges such as producing certain sounds that do not exist in their native languages. AI tools equipped with speech recognition can identify pronunciation errors and give on-demand feedback. Haristiani (2019) found that learners who received immediate corrective feedback on pronunciation using AI tools demonstrated significant improvements in accuracy and accent reduction. In accordance with Haristiani's findings (2019), Tai and Chen (2022) showed that intelligent personal assistants

(e.g., Siri, Google Assistant) improve EFL learners' speaking skills through real-time corrective feedback, resulting in statistically significant improvements in accuracy and accent. Continued engagement with these tools helps learners attain higher phonetic accuracy, which is crucial for effective communication in English (Kim et al., 2019).

AI tools have also been used to support the development of vocabulary and grammar. Through real-time feedback, AI systems allow learners to practice vocabulary, sentence structures, and verb tenses in context. Adamopoulou and Moussiades (2020) found that AI tools providing contextualized grammar and vocabulary activities during speaking activities assisted learners in internalizing rules and their usage more effectively. This process enhances speaking fluency as learners gain confidence in employing accurate language structures (Askari, 2024).

Although AI has numerous benefits in language learning, AI-driven language learning presents certain challenges. One major limitation is that AI cannot fully replicate the subtleties of human interaction. Although AI can offer instant feedback on pronunciation and grammar, only humans can completely mimic the richness of communication, such as nonverbal cues, emotions, and culture (Rafikova & Voronin, 2025). In addition, while AI systems such as Talkpal.AI have made considerable progress in natural language processing, issues regarding the precision and constraints of speech recognition technology persist in speech recognition, particularly for learners with varying accents or speaking patterns (Kim et al., 2019).

Although some studies have been conducted on the use of AI in developing language skills, there is a need for further investigation into how tools such as Talkpal.AI may help improve speaking skills among EFL students. Most research has focused on broader language abilities, including listening and writing, with less emphasis on speaking fluency, pronunciation, lexis, and grammar (Fryer & Carpenter, 2006). Consistent with this trend, Jeon J. (2022) noted that most studies evaluating chatbots for speaking focused on assessing speaking more generally with limited efforts to evaluate specific subskills of speaking such as pronunciation or fluency.

This study aims to address this oversight by examining the impact of Talkpal.AI on the speaking abilities of EFL undergraduates, with a special focus on fluency, pronunciation, vocabulary, and grammar.

RESEARCH METHOD

Participants

This study focused on 40 level one students enrolled in an English foundation course at a university in Kuwait. The course's objective was to improve students' English skills before majoring in engineering, business or aviation. The uniformity of students was assured based on the scores they obtained on the

Michigan Test or the IELTS exam. The students took the Michigan Test on campus. Only students who scored between 20 and 30 out of 80 (equivalent to A1 on the CEFR scale) or between 3 and 3.5 on the IELTS Academic exam were eligible for the English Foundation course at Level 1.

The study included thirty-two male and eight female students aged between 18 and 27 years. All the students were informed of the research objectives and implementation. All participants signed a consent form to participate in this study.

During the study, the participants used Talkpal.AI as an additional learning tool to improve their speaking skills. Before the intervention, the participants completed a pretest to reveal the current English-speaking level of both intensive sections. The pretest consisted of a 3-minute speaking level test with three questions on a specific topic. The students had 30 seconds to prepare their answers and 60 seconds to respond to each question.

Over the eight-week treatment period, students engaged in 10-minute sessions with Talkpal.AI three times a week. They utilized Talkpal.AI during class to improve their speaking skills. Convenience sampling was chosen because of its practical benefits, such as participant accessibility during class hours, which increased response rates and guaranteed the accuracy of the data gathered.

Research Instruments

This study aimed to determine the effectiveness of Talkpal.AI in enhancing English-speaking skills. To assess participants' initial speaking proficiency, a pretest was administered to determine their preliminary English-speaking level in terms of fluency, vocabulary, grammar, and pronunciation before the intervention using Speech Ace, a speech recognition API designed to assess four main areas: fluency, pronunciation, vocabulary, and grammar (see Table 1). The pretest consisted of a 3-minute speaking assessment, and the four main aspects were evaluated using a 9-point rating scale, where 1 indicated very low performance and 9 indicated excellent performance. The Speech ace-speaking test demonstrated high reliability. For instance, a study showed that the test scores had a high correlation (0.80) with human graders' scores, with a mean difference of ± 0.54 IELTS points (Speech Ace, n.d.).

After the eight-week treatment period, a posttest was conducted using 'Speech Ace' to measure any progress in the participants' speaking fluency, pronunciation, vocabulary, and grammar.

Research Procedure

Over the eight-week intervention period, students used Talkpal.AI to chat with an AI agent during the eight-week test period. The aim of the intervention was to assist the students in improving their speaking skills. Participants chose a

topic from a list provided by the English instructor who instructed them on how to lead a conversation, ensuring the integration of key language elements.

The participants engaged in conversations across twenty-four sessions. They spent 10 minutes with interaction with an AI agent to practice fluency, pronunciation, vocabulary, and grammar. The topics selected for discussion were aligned with the English instructors' guidelines. Before the intervention, students were administered a pretest to assess their initial English-speaking proficiency.

After the pretest, the students were trained for two hours on how to use Talkpal.AI. Once they were familiar with the app, the participants began using Talkpal.AI to discuss various topics based on the questions provided by the instructor with the AI agent. Their aim was to help them gain the maximum information from these interactions.

Table 1
Research Instrument

Assessment Main Areas	Description	Rating Scale
Fluency	Measures speed, pauses, and hesitation while speaking	0-9
Pronunciation	Ability to pronounce words correctly	0-9
Vocabulary	Evaluates word choice and appropriateness in context	0-9
Grammar	Assess sentence structures, subject-verb agreement, verb tense and word order	0-9

Note. The rating scale ranges from 0 (lowest) to 9 (highest).

At the end of the eight weeks, a posttest was conducted to assess the progress in speaking fluency, pronunciation, vocabulary, and grammar. The findings from both tests were analyzed to determine the effectiveness of Talkpal.AI in improving students' speaking skills.

Data Collection

The data for this study were collected to assess the impact of Talkpal.AI on English-speaking skills. A quantitative method was used to answer the study's question. A total of 40 students enrolled in an English foundation course at a university in Kuwait. The main data sources were pre- and post-speaking assessments conducted before and after the intervention. Data were collected over a 9-week period, during which EFL students were required to engage in sessions using Talkpal.AI to practice speaking skills based on instructor-provided topics.

Data Analysis

A quantitative approach was used to examine the impact of Talkpal.AI chatbots on enhancing EFL students' English-speaking skills. The pretest and posttest results, which evaluated speaking fluency, pronunciation, vocabulary, and grammar, were analyzed using Excel.

Collected data was entered into an Excel spreadsheet, which Excel formulas and functions were used to perform these calculations. Descriptive statistics, including means and standard deviations, were calculated using the AVERAGE function on Excel. For inferential statistics, paired t-tests were conducted to compare students' performance before and after using Talkpal.AI, employing Excel's T.TEST function.

Additionally, visual representations of the data, including bar charts, were created to illustrate trends and patterns. These visual tools aided the interpretation of the collected data, leading to a comprehensive understanding of the impact of Talkpal.AI on EFL students.

RESULTS

To examine the impact of Talkpal.AI in enhancing learners' English-speaking abilities, the results were examined by obtaining a pretest and posttest using Microsoft Excel. The exam consists of four major components: pronunciation, fluency, vocabulary, and grammar. These were scored and compared using the International English Language Testing System, where the score ranged from 0 to 9.

The results of the quantitative data collection in Figure 1 show the average pronunciation scores, which were 6.06 in the pretest and 7.04 in the posttest, reflecting an improvement of 0.98 points. Fluency scores increased by 0.73 points from pretest (6.13) to posttest (6.86). The improvement in vocabulary, as assessed by scores, was slight, with the average score increasing from 4.42 during the pretest to 4.71 in the posttest (an increase of 0.29 points). For grammar, the mean pretest score was 4.62 with a posttest average of 4.94, which improved to 0.32 points.

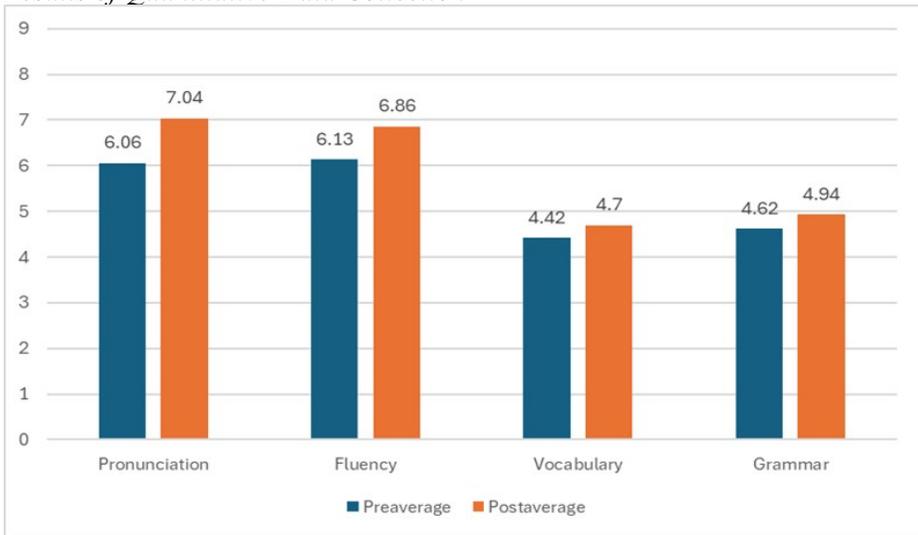
Statistical analysis using a paired *t*-test for each skill area demonstrated statistically significant improvement (Table 2). The *t*-statistic for pronunciation was 5.08, $p < .001$, indicating that Talkpal.AI contributed to an improvement in pronunciation. Fluency was also significantly improved, with a *t*-statistic of 5.14, $p < .001$. In addition, vocabulary showed statistically significant progress as indicated by a *t*-statistic of 2.64, $p = .012$. Finally, grammar scores significantly improved ($t = 4.22$, $p < .001$). Taken together, these results indicate a statistically significant beneficial effect of the intervention in all domains measured.

Table 2
Pre and Posttest Results for Language Skills

Skill	Pretest	Posttest	<i>t</i>	<i>p</i>
	<i>M (SD)</i>	<i>M (SD)</i>		
Pronunciation	6.06 (0.72)	7.04 (0.83)	5.08	< .001
Fluency	6.13 (0.57)	6.86 (0.15)	5.14	< .001
Vocabulary	4.42 (0.24)	4.71 (0.24)	2.64	.012
Grammar	4.62 (0.14)	4.94 (0.13)	4.22	< .001

Note. *N* = 40. *M* = Mean; *SD* = Standard Deviation. All tests were two-tailed.

Figure 1
Results of Quantitative Data Collection



Note. Comparison of average pretest and posttest mean scores of students across four speaking components.

DISCUSSION

The results showed that students who used Talkpal.AI showed improvements in their pronunciation. This is consistent with the findings of Çakmak (2022), who stated that AI tools, such as Talkpal.AI, provide a stress-free environment that encourages students to express themselves freely. Instant feedback from AI on pronunciation also seems to be crucial for correcting mistakes, showing that students greatly improve their pronunciation over time.

The results showed significant improvement in fluency. This improvement reflects the effectiveness of Talkpal.AI in providing interactive conversations that closely mirror real-world speaking opportunities. Such opportunities for practice

are critical for enhancing fluency, as they allow students to focus more on speech production than on grammatical structures or lexis usage. This is supported by Kim et al. (2019), who suggested that AI language tools could reduce anxiety and improve confidence by promoting regular practice.

This study found an improvement in students' ability to structure sentences accurately and thoughtfully. This is particularly clear in simple sentence structures. Talkpal.AI offers real-time contextual feedback and explanations, enabling students to learn grammar in interactive and dynamic environments. This positive impact aligns with Fryer and Carpenter (2006), further supported by Ye et al. (2021), who found that AI tools incorporating corrective feedback mechanisms assisted students in acquiring grammatical forms through immediate correction and reinforcement.

According to the data, EFL students showed some improvement after using the application; however, the extent of the improvement was limited. Very little progress has been made in the use of advanced lexis. AI-based platforms, such as Talkpal.AI, help improve vocabulary through exposure (new words in context) and usage in dialogue. Even if the observed gains are minimal, they reflect the potential of Talkpal.AI to scaffold language acquisition by giving learners the opportunity to practice high-frequency vocabulary, as suggested by Brown and Lee (2015), who emphasized the significance of technology in enhancing vocabulary acquisition.

These results are consistent with related studies of the benefits of AI-assisted tools for language learning, particularly speaking skills. For example, El Shazly (2021) demonstrated the advantages of AI tools such as chatbots on EFL students' speaking skills to guarantee that students can provide adaptive feedback and training. Despite the existence of studies on the general effects of Talkpal.AI, this study is unique in that it investigates the effects of Talkpal.AI on various dimensions of speaking proficiency (fluency, pronunciation, vocabulary, and grammar), and is an important contribution to the existing literature in this field.

The results also suggest that the students performed better in fluency and pronunciation than in vocabulary and grammar. Although more traditional methods may be required to address grammar and vocabulary acquisition, this gap highlights the strengths of AI in facilitating conversational practice (Suhail, 2024).

This study's findings have significant implications for EFL education. This includes allowing students to practice with language tools (such as Talkpal.AI), enabling them to increase autonomy in practice without the fear of making mistakes, and improving their language ability. This is particularly useful in environments in which students do not have direct contact with native speakers.

Educational institutions can incorporate AI-powered platforms in their language courses. Considering the scalability of AI tools, such as Talkpal.AI, this could also be a low-cost solution to integrate into curricula for big classes,

facilitating personalized speaking practice and providing automated, real-time feedback.

Based on the findings of this study, several potential pathways should be developed for future research. An example of such research would be to investigate whether the changes witnessed in this study were the same across proficiency levels (beginner, intermediate, and advanced). Further, future research may explore which aspects of Talkpal.AI (e.g., feedback systems and conversational prompts) work best in enhancing speaking skills.

Evaluating the application of Talkpal.AI with other supplemental language-learning frameworks, such as pronunciation workshops, may be another area for future research. It would be interesting to determine whether searching for incorporating AI into traditional methods would lead to more significant improvements.

Finally, a comparative study involving Talkpal.AI and other AI tools used for language learning would provide more insight into the benefits and disadvantages of using AI-powered language learning technology.

Limitations

The scope of this study had some limitations that should be considered:

Sample Size: The sample size of 40 students was objectively limited, as each instructor typically taught multiple skills each semester and each English instructor managed only one or two speaking classes. Ideally, a larger number of students would have enhanced the study's ability to obtain more consistent results in the pre-experimental design.

Sample Diversity: The study was conducted with EFL students from Kuwait. This lack of diversity limits the generalizability of the findings to learners with diverse linguistic and cultural backgrounds. Including a variety of nationalities would help assess whether the Talkpal.AI adapts well to these differences and provide customized feedback for each group.

CONCLUSION

This study was conducted to investigate the impact of Talkpal.AI on improving EFL undergraduate students' English-speaking skills. The results showed that EFL students who used Talkpal.AI for eight weeks significantly improved their English-speaking ability, especially in the areas of pronunciation and fluency. The results of this study align with those of previous studies of the impact of AI chatbots on language learning, suggesting that AI-based interventions can enhance speaking skills.

Despite these positive results, there were limitations in terms of the sample size and lack of diversity in the student population. 40 students were objectively limited as each instructor was constrained by the requirements of instructors to teach different skills throughout the semester. In addition, the lack of diversity in the sample, as the study focused on EFL students from Kuwait, limits the generalizability of the findings to other nationalities or linguistic groups.

Moving forward, it is essential to acknowledge and set AI-supported learning environments in all educational contexts that are increasingly trying to promote knowledge and learning contexts to aspects of learning and teaching. Educators can use Talkpal.AI to provide students with opportunities to practice speaking when they do not have direct contact with native speakers.

The findings of the current study can encourage future researchers to investigate whether the changes witnessed in this study are the same across proficiency levels. Moreover, further research can evaluate Talkpal.AI in comparison with other supplemental language learning frameworks or with other AI tools in language learning to gain a deeper understanding of the advantages and drawbacks of using AI-powered language learning technology. This information serves as motivation for future research to explore the long-term effects of Talkpal.AI.

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