Empirical Analysis of the Application of Artificial Intelligence Assisted Language Learning in Improving Second Language Ability of Second Language Learners Taking HelloTalk and Duolingo as Examples

Tianjia Chen

Moray House School of Education and Sport, University of Edinburgh, Edinburgh, UK

`chentianjiauibe@163.com`

Abstract. With the development of globalization, learning a second language has become a demand for more and more people, and the rapid development of mobile applications and artificial intelligence technology has provided new possibilities for language learning. Firstly, we delved into the HelloTalk application, which is a language communication and social platform that allows learners to interact in real-time with native speakers. Through the analysis of the functions and characteristics of HelloTalk, it is found that this application helps improve learners' oral fluency, listening comprehension ability, and cultural communication skills. The empirical results indicate that learners who use HelloTalk have made significant progress in oral communication and are satisfied with the social nature of the application. Secondly, a detailed study was conducted on the Duolingo application, which provides a gamified learning experience. By analyzing the functions and characteristics of Duolingo, it was found that it has had a positive impact on multiple language skills such as grammar accuracy, vocabulary mastery, listening comprehension, and oral expression. Learners accumulate language knowledge by completing tasks and practicing in applications, and personalized learning paths make the learning process more efficient and interesting.

Keywords: Artificial intelligence; Second language; Ability improvement; HelloTalk; Duolingo

1   Introduction

In recent years, the rapid development of artificial intelligence technology has provided new possibilities for second language learners. Various artificial intelligence assisted language learning applications have emerged, with HelloTalk and Duolingo as representatives. HelloTalk is a language communication and social platform that allows users to interact and learn with native speakers from different countries. Duolingo provides a gamified learning experience that helps learners easily and interestingly master new languages. These two applications are highly popular in the field of language

learning, but how they affect the improvement of second language proficiency of second language learners still requires empirical analysis to determine.

2   Empirical Analysis of HelloTalk Application

2.1   Functions and Features of HelloTalk

HelloTalk is a multifunctional language learning social platform that provides language learners with a rich learning experience.

Firstly, the uniqueness of HelloTalk lies in its creation of a multilingual learning social platform that allows users to interact with native speakers from various countries and regions. Users can choose the target language they want to learn based on their interests and learning objectives, and match it with native speakers of that language through the application. This feature enables learners to obtain authentic language input and in-depth cultural exchange experiences, thereby better understanding the culture and context behind the target language. Secondly, HelloTalk comes with multiple built-in language learning tools, including voice messaging, text translation, grammar correction, and pronunciation exercises. The existence of these tools inspires users to actively participate in language learning, as they can communicate with native speakers through the application and receive immediate feedback and improvement opportunities in the process. For example, users can send voice messages to practice oral expression and then receive pronunciation feedback from native speakers, which can help improve pronunciation accuracy. Finally, HelloTalk also supports voice call and video chat functions, allowing users to further improve their oral and listening skills through real-time voice and video communication.

In summary, the HelloTalk application, with its multilingual social platform, language learning tools, and real-time voice interaction capabilities, provides a comprehensive and interesting learning environment for second language learners, helping them more effectively improve their language abilities[1].

2.2   Research Methods and Data Collection

When conducting empirical analysis on the application of HelloTalk, a mixed research method was used, combining quantitative and qualitative data collection and analysis to comprehensively understand its effectiveness in improving second language proficiency of second language learners. The following is a detailed explanation of the research methods and data collection:

Firstly, a quantitative study was conducted, recruiting a group of volunteers as second language learners and requiring them to engage in language learning activities on HelloTalk applications. Collected their learning data, including learning duration, learning frequency, language interaction frequency, and language correction frequency. These data are used to quantify the impact of HelloTalk applications on language learning and conduct statistical analysis to determine whether there is a significant improvement in second language proficiency.

Secondly, in order to gain a deeper understanding of the user experience and learning effectiveness of HelloTalk applications, a series of qualitative studies were conducted, including semi-structured interviews and questionnaire surveys. Conduct individual interviews with participants to inquire about their views, usage experiences, and perceived language learning outcomes regarding HelloTalk. At the same time, they were also required to fill out questionnaires to collect a wider range of qualitative data, covering the challenges they encountered in their application, improvement suggestions, and overall evaluation of the application.

2.3   Empirical Results and Data Analysis

Firstly, through quantitative data analysis, it was found that learners using HelloTalk applications showed a significant increase in learning duration and frequency. This indicates that HelloTalk encourages learners to participate more frequently in language learning activities and spend more time on learning. In addition, the number of language interactions and language corrections has also significantly increased, indicating that learners are more actively interacting with native speakers and benefiting from their feedback and corrections.

Secondly, qualitative data analysis reveals learners' positive evaluations of HelloTalk applications. Participants generally believe that HelloTalk provides them with valuable opportunities to interact with native speakers, which helps improve their oral expression and listening comprehension abilities. Many learners also express that through the application of grammar correction and pronunciation practice functions, they have received targeted language feedback, which helps them improve grammar and pronunciation. In addition, the social nature of the application is also considered to enhance learning motivation, as learners can establish friendships, motivate and support each other.

Finally, data analysis shows that learners who use HelloTalk applications have made significant progress in language learning. They have significantly improved their grammar accuracy, pronunciation accuracy, and vocabulary mastery. These results are consistent with previous studies, indicating that the application of HelloTalk has a positive impact on improving second language proficiency of second language learners[2].

2.4   The impact of HelloTalk on the improvement of second language proficiency of second language learners

Firstly, the HelloTalk application significantly improves learners' oral expression skills by providing real-time interaction opportunities with native speakers. Learners can engage in conversations with native speakers through voice messages and video chats, obtaining valuable feedback on pronunciation and intonation. This direct language communication helps learners confidently express themselves, improving their oral fluency and communication skills.

Secondly, the HelloTalk application helps learners improve grammar accuracy and writing ability through its grammar correction and text translation functions. Learners can send their sentences to native speakers, who can promptly point out grammar errors

and provide suggestions for correction. This personalized grammar feedback helps learners correct common grammar errors and gradually improve their writing skills.

Finally, HelloTalk applications can also help learners expand their vocabulary and improve their listening comprehension abilities. Through chatting and text interaction with native speakers, learners are exposed to a wealth of vocabulary and oral expressions. At the same time, the built-in voice message function of the application enables learners to hear the true pronunciation of native speakers, which helps them improve their listening comprehension level.

3   Empirical Analysis of 3 Duolingo Applications

3.1   Functions and Features of Duolingo

Firstly, Duolingo offers a variety of language learning courses, covering a wide range of languages, from common ones such as English, Spanish, and French to relatively less learned languages such as Bengali and Irish. This multilingual support enables learners to choose the target language they are interested in, whether for travel, work, or academic purposes. Secondly, Duolingo's learning content is designed to be lively and interesting, presented in a gamified manner, attracting a large number of learners. Learners can complete various tasks, such as filling in the blank, listening, translation, and pronunciation exercises, to accumulate knowledge and improve skills through these tasks. The application also uses a reward system and leaderboards to stimulate learners' competitive awareness, making the learning process more interesting and dynamic. Finally, Duolingo emphasizes personalized learning experiences. The application will automatically adjust the difficulty level based on learners' performance and learning speed, ensuring that each learner can move forward at a pace that suits them. This adaptive learning method can help learners fully utilize their learning time while reducing frustration[3].

3.2   Research Methods and Data Collection

Firstly, a quantitative study was conducted, which attracted a group of volunteer Duolingo application users. These users actively participate in the research because they believe it is an opportunity to understand their progress in language learning. Researchers use built-in data analysis tools to collect learners' learning data, including learning duration, daily learning frequency, course completion status, and practice frequency. These data are crucial for quantifying the impact of Duolingo applications on language learning. By tracking these indicators, researchers can identify changes in learners' learning behavior in applications and whether they participate more frequently in learning activities.

Secondly, in order to gain a deeper understanding of the user experience and learning effectiveness of the Duolingo application, qualitative research was conducted. This part of the research covers two aspects: semi-structured interviews and questionnaire surveys. In semi-structured interviews, researchers conducted individual in-depth interviews with participants. In these interviews, learners were asked about their views on

the application of Duolingo, usage habits, learning motivation, and perceived language learning outcomes. These interviews provide researchers with important information about learners' subjective views and experiences. At the same time, questionnaire surveys are also part of qualitative research. Researchers require participants to fill out questionnaires to collect a wider range of qualitative data. The questionnaire covers the challenges faced by learners in the application, suggestions for improvement, and an evaluation of the overall effectiveness of the application. These questionnaires provide a more systematic way to collect feedback from learners, helping researchers comprehensively understand their views on the application of Duolingo.

3.3   Empirical Results and Data Analysis

Firstly, through quantitative data analysis, it can be clearly observed that learners who use the Duolingo application show a significant increase in learning duration and daily learning frequency. The increase in learning duration is significant, and researchers collected learning data from learners using the Duolingo application, including the duration of each learning session. Analyzing these data indicates that learners tend to spend more time on language learning activities in applications, indicating a greater investment in learning. The daily learning frequency also shows a significant increase, which means that learners are more determined to use the Duolingo app for learning every day, possibly striving to achieve their daily learning goals. This frequent learning behavior may be due to the design of the application attracting their interest and making them willing to participate in learning.

Secondly, through qualitative data analysis, it was found that participants generally gave positive feedback on the gaming learning experience of the Duolingo application. Learners say that the learning tasks and challenges in the application are designed to be very interesting, making learning more enjoyable. They emphasized the fun of tasks and challenges, including various types such as filling in the blank, listening, translation, and pronunciation exercises. At the same time, learners believe that game elements such as reward systems and leaderboards in applications stimulate their competitive awareness and increase their motivation for learning[4].

3.4   The Impact of Duolingo on the Improvement of Second Language Ability of Second Language Learners

Firstly, the Duolingo application stimulates learners' interest and motivation through its diverse learning tasks and gamified learning experience, enabling them to participate more frequently in learning. This positive learning motivation helps learners persist in learning and spend more time every day improving their language skills. Quantitative data shows that learners' learning duration and daily learning frequency have significantly increased, reflecting their active participation in Duolingo applications.

Secondly, through the application of adaptive learning methods, learners can move forward based on their own learning progress and level, making learning more personalized and efficient. The application will automatically adjust the difficulty level based on the learners' performance, ensuring that they are always at a suitable learning stage

for themselves. This personalized learning experience helps learners fully utilize their learning time, reduce frustration, and thus increase the continuity and effectiveness of learning[5].

4   Conclusion

In summary, HelloTalk and Duolingo, as artificial intelligence assisted language learning applications, both provide powerful learning tools for second language learners. They help learners improve their language skills, motivation, and efficiency by providing diverse learning experiences, interactive opportunities, and personalized paths. However, these two applications also face some challenges, such as the need for continuous use and self motivation. Therefore, in future research, it is necessary to further explore how to optimize these applications to maximize the second language proficiency of second language learners and gain a more comprehensive understanding of their effects under different learning backgrounds and goals.

References

1. Moulieswaran N,Prasantha Kumar N S. Amelioration of Google Assistant – A Review of Artificial Intelligence Stimulated Second Language Learning and Teaching[J]. World Journal of English Language,2022,13(1).
2. Nguyen Truong Thinh,Nguyen Dao Xuan Hai,Tuong Phuoc Tho. The Influential Role of Robot in Second Language Classes Based on Artificial Intelligence[J]. IJMERR,2020,9(9).
3. Kannan Jaya,Munday Pilar. New Trends in Second Language Learning and Teaching through the lens of ICT, Networked Learning, and Artificial Intelligence[J]. Círculo de Lingüística Aplicada a la Comunicación,2018,76(0).
4. New Trends in Second Language Learning and Teaching through the lens of ICT, Networked Learning, and Artificial Intelligence[J]. Amherst College.;Sacred Heart University.,2018.
5. Marina Dodigovic. Artificial Intelligence and Second Language Learning: An Efficient Approach to Error Remediation[J]. Language Awareness,2007,16(2).