A Study on English Students' Perception Regarding the AI Implementation on Listening and Speaking Skills

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ABSTRACT

Listening and speaking teaching have always been weak links in English teaching. The emergence of the intelligent learning system breaks the traditional learning method in the classroom, allowing students to obtain learning resources anytime, anywhere, free from fixed time and fixed space. This study aims to know student perceptions of English educational students regarding the implementation of AI to increase listening and speaking skills and to know the limitations and difficulties English education students face while using Duolingo and ELSA Speak applications. We conducted a reflection and semi-structured interview among undergraduate English education students in West Java. A total of 6 participants and all of them are 7th semester English Language Education students. The majority of them agree that AI can increase listening and speaking skills, especially Duolingo and ELSA Speak. Even though there are a lot of limitations and difficulties that need to be considered, such as having a stable internet connection and storage capacity, the student still mentioned that Duolingo and ELSA Speak are great applications for improving listening and speaking skills.

INTRODUCTION

The development of Artificial Intelligence (AI) in English language learning has grown rapidly in recent years and has undergone a significant transformation (Chen et al., 2020; G. Yaseen & S. Alnakeeb, 2023; Hwang et al., 2020). In this context, Artificial Intelligence can act as an educational assistant in learning that plays a central role in facilitating the learning process (Gabriel et al., 2022; Seo et al., 2021). AI also can be defined as the skillful imitation of human behavior or mind by tools or programs that can think and act humanly and rationally (Mohammed & 'Nell' Watson, 2019).

Artificial Intelligence also has great potential for education as it can generate appropriate predictive and diagnostic models for education, help visualize at-risk students, provide timely interventions, and reduce dropout rates (Li et al., 2018; Shakhnoza Shokirovna, 2023.). Moreover, an educational technologist asserts that AI has the potential to change the way we teach language, making it more accessible and efficient for learners

from diverse backgrounds (Hatos, n.d.; Pokrivcakova, 2019). Some previous research also finds that technology use could certainly help them develop their creativity and help educators (Marrone et al., 2022). Based on previous research results, it is stated that artificial intelligence can help teachers improve personalized education for their students, provide effective learning experiences, enable students to discover their talents, improve their creativity, and reduce teachers' workload (Haseski, 2019; Sekeroglu et al., 2019)

Nowadays, many teachers and students think that the use of AI can help their learning process (Djokic et al., 2024). Students also have a positive perception of the use of AI in education because it provides many benefits (Chan & Hu, 2023; Gherhes & Obrad, 2018). Such as improving the quality of learning and providing more learning experiences and has the potential to influence the student experience (Branson et al., 2019). Potentially, with the use of artificial intelligence, every student could

have her/his personalized learning companion, which besides the roles of a learning partner, guide, and instructor, would continuously record the student's improvements and interests (Holmes et al., 2019), can improve their speaking ability, and able to develop their listening skills (Mohammed Mahmoud Ghoneim & Elsayed Abdelsalam Elghotmy, 2021)

Learning performance can also be improved when students can accept the use of technology (Moghavvemi et al., 2023). One way to measure student acceptance is to understand how they perceive technology in their learning (Vladova et al., 2021).

With its current development, AI has a positive impact on English language learning, the author chose Duolingo and ELSA speak as the observed AI, and some previous studies mostly focused on how AI can help students improve their language skills (Jiang, 2022; Seitan Khashan & Farhan AbuSeileek Professor of TEFL at Al al-, 2023) consisting of 4 skills (reading, writing, listening, and speaking) in language learning.

Research on teaching and learning English as a foreign language (EFL) suggests that listening and speaking are core elements of interaction and facilitate language acquisition (Mohammed Mahmoud Ghoneim & Elsayed Abdelsalam Elghotmy, 2021). ELSA's basic interface is simple and provides navigation between topics and skills, levels, reports, and other features (Becker & Edalatishams, 2019). Elsa speech analyzer must provide high-quality automatic transcripts even for non-native, low-proficiency speakers (Dawalatabad et al., 2021).

While there is negligible research on the perspective of using AI Duolingo and ELSA Speak for speaking and listening skills, especially in undergraduate English language students. We focused on this research. This research proposes: (1) to find out the perceptions of English education students regarding the use of AI, namely whether the Duolingo and ELSA Speak applications can improve speaking and listening skills; (2) to discover the difficulties and limitations of English education students regarding the use of AI, namely whether Duolingo and ELSA Speak apps can improve speaking and listening skills.

METHODS
Research Design

This study adopts a qualitative case study that explores and provides deeper insight into real-world problems. Qualitative research gathers participants' experiences, perceptions, and behavior (Gocen & Aydemir, 2020). This method is related to the research objective to investigate university students' perceptions of how they view and use AI in English language learning, which eventually can be a meaningful suggestion for improving speaking and listening skills in English language learning in higher education.

Population and Samples

The study participants were recruited purposely based on a set of criteria. First, they are 7th-semester English education students. Second, those who use AI in English education such as ELSA Speak, Duolingo, Chat Gpt, Humata, Bingai, etc. Third, they use AI to improve speaking and listening skills. Fourth, they agreed to be involved in this research by signing the consent form offered. Those criteria are intended to be set for the selection of prospective participants. The six participants, Nana, Putri, Husein, Aisyah, Nina, and Hilma (all pseudonyms) are from a private university in West Java.

Instruments

The authors use reflection and semi-structured interviews. In this study, the authors use reflective notes to conduct reflection. The interview is a method in qualitative research where the researcher gathers the data from the participants (Addison, 2021). In collecting data, the authors asked all participants to use the Duolingo and ELSA Speak applications for ten consecutive days. The purpose of data collection is to determine the extent to which students perceive AI to help them improve their listening and speaking skills.

Semi-structured interviews aimed to probe the questionnaire results and were analyzed inductively (Zou et al., 2020). The interview investigated the following:
1. Application for increased listening and speaking skills
2. Students' Perception of Duolingo and ELSA Speak
3. Students perceived difficulties in using Duolingo and ELSA Speak

4. Students perceived limitations of Duolingo and ELSA speak

Data Analysis Technique

The feedback status of students' listening and speaking English ability was collected through reflective notes (Gebregziabher et al., 2024.). The authors followed the research process using reflective notes and analysis of semi-structured interviews by identifying a student's perspective about AI to be researched, then grouping students' experiences in using AI and collecting data from several students who had used AI. After participants were interviewed, transcripts were compiled into one document for each participant, and the collected data was manually coded. Regarding the transcript for several days, the authors then analyzed the data, identified important statements or quotes, and combined these statements into themes. The open code is temporarily set. Similar codes are grouped and assigned logical categories. These categories were further analyzed to determine overarching themes that provide insight into students' perspectives of AI in helping improve speaking and listening skills.

Research Procedure

In this study, the researcher collected data from reflective notes and semi-structured interviews. The researchers made a list of students' criteria for interviews selected by the researchers, namely those who know and use AI to improve listening and speaking skills.

1. The researchers selected 6 English Education students.
2. Researchers asked students to write reflective notes about the use of AI.
3. Researchers sent a question semi-structured interview via WhatsApp.
4. Researchers analyzed the reflective notes and semi-structured interviews to conclude from the data.

RESULTS AND DISCUSSION

The Perception of English Education Students Towards Duolingo and ELSA Speak for Increased Listening and Speaking Skills

Perception is one of the important psychological aspects because we know about the kinds that exist in our environment through perception. People have different perspectives on an object, which can be positive or negative ways

(Freiermuth & Zarrinabadi, n.d.). Perception is linked to the inherent psychological characteristics of human beings. It begins with the sensory organs and involves a continuous interaction between the brain and the environment, where the brain processes and accepts information from the surroundings. This ongoing interaction helps individuals understand and make sense of their environment (Akhtar et al., 2021; Karacaoǧlu & Özkaya, 2023; Namaziandost et al., 2019). However, what individuals believe in their minds is what they perceive. They perceive something favorably if they think positively about them. Additionally, if they are thinking negatively, this affects how they perceive things. The findings follow other research examining the perceived effectiveness of AI speaking apps in enhancing speaking skills (Chan & Hu, 2023; Yufei et al., 2020; Zou et al., 2023).

On the other hand, people use a variety of language skills - listening, speaking, reading, and writing. When people learn a foreign language, they usually want to make use of that language to communicate with people who speak the same language. Listening and speaking skills have been recognized as crucial components of effective communication, alongside reading and writing skills. This emphasizes the significance of these skills in facilitating successful language communication (Bletscher & Lee, 2021). In academic work, listening and speaking are considered comprehensive key skills, as well as comprehension, vocabulary, grammar, thinking skills, and other elements. Besides that, listening and speaking also require an understanding of linguistic aspects such as the function of language, processing and interpreting spoken words by distinguishing sound, volume, tone, and sophisticated vocabulary.

However, due to the complexity of the aspects involved, students need help listening and speaking fluently and correctly. Alternatively, many students use tools such as Duolingo and ELSA Speak to improve their listening and speaking skills. Therefore, the researcher is interested in exploring students' perceptions of using Duolingo and ELSA Speak to improve their listening and speaking skills. Some previous research also found that ELSA Speak has a positive effect on the speaking abilities of EFL students (W. Y. Hwang et al., 2016).

Respondents in this study were 6 English Education students who experienced using Duolingo and ELSA Speak applications for ten consecutive days there were Husein, Nana, Hilma, Putri, Aisyah, and Hilma.

According to the results of research by (Djokic et al., 2024), students also have a positive perception of the use of AI in education because it provides many benefits. Likewise, Duolingo is a useful application for learning English (Megat-Abdul-Rahim et al., 2021; Munday, 2015, 2017) which makes language learning easy, accessible, and effective (Bahjet Essa Ahmed, 2016), and previous research found that ELSA Speak makes learning easier and more comfortable (Ahmad & Al-Shallakh, 2023).

Based on the semi-structured interview, the participants mentioned that all of them use Duolingo and ELSA Speak to increase their listening and speaking abilities, participants also mentioned that Linggodeer and BBC Learning English can help improve their listening and speaking skills. Based on the data analysis most participants agree with the perception of using Duolingo and ELSA Speak to increase listening and speaking skills, especially among English Education students.

The participants mentioned that using AI, especially Duolingo and ELSA Speak, allowed them to improve their listening and speaking skills with many features that made it easy for them to learn more. Three participants (Husein, Nana, and Hilma) mentioned that Duolingo and ELSA Speak are colorful applications with an attractive appearance so they don't get bored when studying is one of the application's strengths. From these, Duolingo and ELSA Speak have a fairly high level of acceptance among students, which helps to increase listening and speaking skills.

The results of interviews, namely Nana and Aisyah, showed that they first learned about the Duolingo and ELSA Speak applications through Instagram and YouTube advertisements. It attracted their interest to try Duolingo and ELSA Speak applications. After trying the application, the two participants felt the great benefit. One of the benefits they experienced was a significant understanding of listening and speaking English. In addition, from the interview of Nana and Aisyah, the introduction from the advertisement has a

positive impact because it attracts their interest to try it. The 4 participants said that they know Duolingo and ELSA Speak are recommended by their teachers and friends.

This research shows that the majority of the participants agree that using AI apps has many significant benefits for them. Most of them said that Duolingo and ELSA Speak can help them learn more vocabulary, while Putri said that Duolingo and ELSA Speak have a structured application and we can't jump to another section if we don't finish the current task, which can improve listening and speaking skills. Nina also mentioned that Duolingo and ELSA speak are easily accessible from anywhere with an internet connection making it a conventional tool for us to learn a language whatever we want. (G. Yaseen & S. Alnakeeb, 2023) stated that the use of AI in education provides many benefits. Participants found the applications effective in helping them identify how to speak correctly and listen to the right words they might have accidentally missed. In addition, these applications also help improve their listening and speaking comprehension.

The participant also mentioned Duolingo its precise listening corrections and relevant suggestions for improvement. The application automatically detects and highlights common errors, providing users with accurate feedback. Similarly, ELSA Speak is commended for its accurate pronunciation corrections. Both applications offer personalized feedback from both users and experts, which helps learners identify and correct their mistakes, including those that might be easily overlooked.

This study found that participants viewed AI-based language learning apps as tools to enhance language acquisition. The participant said that applications like Duolingo and ELSA Speak have created immersive experiences by incorporating various interactive features that can simulate real-life communication, and show that English education students view AI-based language learning applications positively because language learning applications supported by AI can effectively improve language acquisition, especially speaking and listening skills, these results are in line with the findings of (Cherner et al., 2023; Huang et al., 2023). In addition, by utilizing AI applications to practice English speaking and listening, students

generally had good sentiments towards the interactive activities significantly and all participants agreed that it was a good chance to improve their listening and speaking skills.

A positive recommendation from friends and teachers also shows that Duolingo and ELSA Speak have gained a good reputation among English Education students. These factors play an important role in influencing the views and attitudes of students towards the applications. They tend to be more confident and motivated to use Duolingo and ELSA Speak because they believe these tools have been proven to help increase listening and speaking skills.

This research shows that using both Duolingo and ELSA Speak can boost their motivation to learn more about listening and speaking skills. This statement is related to the fact that Duolingo and ELSA Speak can enhance students' motivation (Zeng & Fisher, 2024). These findings Both applications have interactive learning, interactive lessons, personalized learning, and daily targets. Nana also said that Duolingo and ELSA Speak have a goal-setting feature that can help them stay motivated and focus on improving and learning.

The interviews with English Education reveal that the Duolingo and ELSA Speak applications have a substantial positive impact on their listening and speaking skills (Sudina & Plonsky, 2024). Loewen et al., (2019) said Duolingo enhances vocabulary understanding and listening skills, while ELSA Speak refines pronunciations. Key benefits of using these applications include improved listening comprehension, expanded vocabulary, and enhanced pronunciation, all of which contribute to better overall English proficiency.

Limitations and Difficulties in Duolingo and ELSA Speak Applications

The authors also identified some limitations and difficulties faced by six respondents when using the Duolingo and ELSA Speak applications. The result of the interview stated that Duolingo and ELSA Speak run smoothly but with many obstacles, Hilma mentioned that Duolingo and ELSA Speak must have a stable internet connection. Putri said the applications used a lot of storage, which sometimes the application has stop running in the middle of learning. Husein also mentioned that Duolingo has limited daily hearts, if we answer the question wrong the hearts will decrease, and if all

the hearts it gone, we should wait an hour or more for the hearts to be filled again. In addition, the application cannot run smoothly if have a limited internet connection and low storage.

Based on the interview, the participant mentioned that both applications are paid. Because the applications are paid, they also mentioned they cannot access all the features freely. Despite some obstacles, students recognize the advantages of using Duolingo and ELSA Speak. Duolingo enhances listening skills by correcting mistakes and expanding vocabulary (Shortt et al., 2023) while ELSA Speak refines pronunciation (Ngoc & Thanh, 2023). To maximize their effectiveness, students should use the suggestions thoughtfully, considering the context and their unique listening and speaking styles. By doing so, Duolingo and ELSA Speak can significantly enhance the quality of students' English proficiency. It not only helps to improve pronunciation skills but also builds confidence and teamwork in learning English (Ngoc et al., 2023)

CONCLUSION

The purpose of this study is to find out the three themes of how the perception of using AI in English language learning especially using Duolingo and ELSA speak improves speaking and listening skills. The participants chosen were seventh-semester students and students who have used Duolingo and ELSA Speak applications. Not only that, in this study we focused on finding students' perceptions of the Duolingo and ELSA Speak applications, difficulties while using the Duolingo and ELSA Speak applications, and limitations of the Duolingo and ELSA Speak applications.

Based on the results of research and discussion, in addition to some difficulties of this application such as having to complete the initial level first cannot jump it is difficult for people who are more creative in learning, must be careful when listening because there are some similar words, do not have common mistakes, grammar is not given in full so users have to guess. In addition, there are also limitations in using this application, namely applications that are paid so that the features used are limited, only accept one accent (American accent), and poor voice capture.

This study found that the undergraduate English education students who participated in this study showed positive perceptions towards the use of AI technologies namely Duolingo and ELSA Speak to improve their speaking and listening skills. They reported that the AI used was helpful and effective for their language learning needs, helping them during the listening process getting correct speech, helping them to learn pronunciation and vocabulary in their speaking. With this positive perception, this study shows that AI technology, especially Duolingo and ELSA Speak, can help improve the speaking and listening skills of undergraduate English Education students.

REFERENCES

1. Addison, S. (2021). Impact of Advancement of Technology, Competitive Pressure, User Expectation on Continuous Digital Disruption: Mediating Role of Perceive Ease of Use. *Open Journal of Business and Management*, *09*(04), 2013–1079.

2. Ahmad, M., & Al-Shallakh, I. (2023). Artificial Intelligence-Based Mobile Learning in English Language Teaching (ELT) for EFL Learners: Enhancing Pronunciation with ELSA SPEAK in Oman. In *Arab Humanities Journal* (Vol. 14, Issue 2023).

3. Akhtar, S., Hasan, M., & Iqbal, H. (2021). Changing Student Perception of an Online Integrated Structured Clinical Examination During the Covid-19 Pandemic [Letter]. *Advances in Medical Education and Practice*, *Volume 12*, 1005–1006.

4. Bahjet Essa Ahmed, H. (2016). Duolingo as a Bilingual Learning App: A Case Study. *SSRN Electronic Journal*.

5. Becker, K., & Edalatishams, I. (2019). ELSA Speak-Accent Reduction [Review. In *Iowa State University. Pronunciation in Second Language Learning and Teaching* (Vol. 10).

6. Bletscher, C. G., & Lee, S. (2021). The Impact of Active Empathetic Listening on an Introductory Communication Course. *College Teaching*, *69*(3), 161–168.

7. Branson, M., Carter, L., Deleon, S., Ellis, F., Gundlach, J., & Lee, C. (2019). Using Artificial Intelligence to Enhance Educational Opportunities and Student Services in Higher Education. In *Inquiry: The Journal of the Virginia Community Colleges* (Vol. 22, Issue 1).

8. Chan, C. K. Y., & Hu, W. (2023). Students' voices on generative AI: perceptions, benefits, and challenges in higher education. *International Journal of Educational Technology in Higher Education*, *20*(1).

9. Chen, L., Chen, P., & Lin, Z. (2020). Artificial Intelligence in Education: A Review. *IEEE Access*, *8*, 75264–75278.

10. Cherner, T., Fegely, A., Hou, C., & Halpin, P. (2023). AI-Powered Presentation Platforms for Improving Public Speaking Skills: Takeaways and Suggestions for Improvement. In *Jl. of Interactive Learning Research* (Vol. 34, Issue 2).

11. Dawalatabad, N., Ravanelli, M., Grondin, F., Thienpondt, J., Desplanques, B., & Na, H. (2021). ECAPA-TDNN embeddings for speaker diarization. *Proceedings of the Annual Conference of the International Speech Communication Association, Interspeech*, *4*, 2528–2532.

12. Djokic, I., Milicevic, N., Djokic, N., Malcic, B., & Kalas, B. (2024). Students' Perceptions of the Use of Artificial Intelligence in Educational Services. *Amfiteatru Economic*, *26*(65), 294–310.

13. Freiermuth, M. R., & Zarrinabadi, N. (n.d.). *Technology and the Psychology of Second Language Learners and Users*. http://www.palgrave.com/gp/series/14736

14. Gabriel, F., Marrone, R., Van Sebille, Y., Kovanovic, V., & de Laat, M. (2022). Digital education strategies around the world: practices and policies. *Irish Educational Studies*, *41*(1), 85–106.

15. Gebregziabher, H., BabuB, R., Tilahun Abera, K., & Solomon Tsige, M. (n.d.). Improving English Listening and Speaking Ability Based on Artificial Intelligence Wireless Network.

16. Gherhes, V., & Obrad, C. (2018). Technical and Humanities Students' Perspectives on the Development and Sustainability of Artificial Intelligence (AI). *Sustainability*, *10*(9), 3066.

17. Gocen, A., & Aydemir, F. (2020). Artificial Intelligence in Education and Schools. *Research on Education and Media*, *12*(1), 13–21.

18. G. Yaseen, M., & S. Alnakeeb, S. (2023). Exploring the Evolution of AI Integration in English as a Foreign Language Education: A Scopus-Based Bibliometric Analysis (1997-2023). *Mesopotamian Journal of Computer Science*, 149–164.

19. Haseski, H. I. (2019). What Do Turkish Pre-Service Teachers Think About Artificial Intelligence? *International Journal of Computer Science Education in Schools*, *3*(2), 3–23.

20. Hatos, A. (n.d.). Study the Impact of Digitalization on Educational Achievement: A Literature Review from A Sociological Perspective

21. Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial Intelligence in Education Promises and Implications for Teaching and Learning.* http://bit.ly/AIED-

22. Huang, X., Zou, D., Cheng, G., Chen, X., & Xie, H. (2023). Trends, Research Issues and Applications of Artificial Intelligence in Language Education. *Educational Technology and Society*, *26*(1), 112–131.

23. Hwang, G. J., Xie, H., Wah, B. W., & Gašević, D. (2020). Vision, challenges, roles and research issues of Artificial Intelligence in Education. In *Computers and Education: Artificial Intelligence* (Vol. 1). Elsevier B.V.

24. Hwang, W. Y., Shih, T. K., Ma, Z. H., Shadiev, R., & Chen, S. Y. (2016). Evaluating listening and speaking skills in a mobile game-based learning environment with situational contexts. *Computer Assisted Language Learning*, *29*(4), 639–657.

25. Jiang, R. (2022). How does artificial intelligence empower EFL teaching and learning nowadays? A review on artificial intelligence in the EFL context. *Frontiers in Psychology*, *13*.

26. Karacaoglu, O.C. & Özkaya, A. (2023). Environmental Sensitivity of Teacher Education Students in the Earthquake Zone. *Indonesian Journal of Social and Environmental Issues* (*IJSEI*), 4(3), 339-352.

27. Li, J., Cheng, H., Guo, H., & Qiu, S. (2018). Survey on Artificial Intelligence for Vehicles. *Automotive Innovation*, *1*(1), 2–14.

28. Loewen, S., Crowther, D., Isbell, D. R., Kim, K. M., Maloney, J., Miller, Z. F., & Rawal, H. (2019). Mobile-assisted language learning: A Duolingo case study. *ReCALL*, *31*(3), 293–311.

29. Marrone, R., Taddeo, V., & Hill, G. (2022). Creativity and Artificial Intelligence—A Student Perspective. *Journal of Intelligence*, *10*(3), 65.

30. Megat-Abdul-Rahim, P. R., Idris, S. L., Rahman, Z. I. A., Shaq, M. S. Y., & Nasir, N. F. (2021). Approaching Listening and Speaking Skills Using Online to Facilitate Interactive Learning from Students' Perspectives. *Asian Journal of University Education*, *17*(2), 203–214.

31. Moghavvemi, S., Phoong, S. W., & Phoong, S. Y. (2023). *Technology Usage and Students Performance: The Influence of Blended Learning* (pp. 237–253).

32. Mohammed Mahmoud Ghoneim, N., & Elsayed Abdelsalam Elghotmy, H. (2021). Using an Artificial Intelligence Based Program to Enhance Primary Stage Pupils' EFL Listening Skills. المجلة التربوية لكلية التربية بسوهاج, *83*(83), 1–324.

33. Mohammed, P. S., & 'Nell' Watson, E. (2019). *Towards Inclusive Education in the Age of Artificial Intelligence: Perspectives, Challenges, and Opportunities* (pp. 17–37).

34. Munday, P. (2015). The Case for Using Duolingo as Part of the Language Classroom Experience. *RIED. Revista Iberoamericana de Educación a Distancia*, *19*(1).

35. Munday, P. (2017). Duolingo. Gamified learning through translation. *Journal of Spanish Language Teaching*, *4*(2), 194–198.

36. Namaziandost, E., Neisi, L., Mahdavirad, F., & Nasri, M. (2019). The relationship between listening comprehension problems and strategy usage among advance EFL learners. *Cogent Psychology*, *6*(1).

37. Ngoc, N. K., & Thanh, N. T. M. (2023). Non-Specialized Students' Benefits and Challenges in Using Elsa Speak Application for Pronunciation Learning. *European Journal of Alternative Education Studies*, *8*(4).

38. Ngoc, N. K., Thanh, N. T. M., & Thanh, N. T. M. (2023). Tertiary Students' Perceptions on Elsa Speak Application for Pronunciation Learning. *European Journal of Applied Linguistics Studies*, *7*(1).

39. Pokrivcakova, S. (2019). Preparing teachers for the application of AI-powered technologies in foreign language education. *Journal of Language and Cultural Education*, 7(3), 135–153.

40. Seitan Khashan, H., & Farhan AbuSeileek Professor of TEFL at Al al-, A. (2023). The Effect of Using British Council BBC Learning English Application on the Tenth Grade EFL Students' Listening and Speaking Skills and their Attitudes toward it. In *Journal of Applied Linguistics and Language Research* (Vol. 10, Issue 2).

41. Sekeroglu, B., Dimililer, K., & Tuncal, K. (2019). Student Performance Prediction and Classification Using Machine Learning Algorithms. *Proceedings of the 2019 8th International Conference on Educational and Information Technology*, 7–11.

42. Seo, K., Tang, J., Roll, I., Fels, S., & Yoon, D. (2021). The impact of artificial intelligence on learner–instructor interaction in online learning. *International Journal of Educational Technology in Higher Education*, 18(1).

43. Shakhnoza Shokirovna, D. (n.d.). *»* The Benefits of Using Modern Technologies in Teaching and Learning English. *Modern Science and Research.* 2(10), 84-89.

44. Shortt, M., Tilak, S., Kuznetcova, I., Martens, B., & Akinkuolie, B. (2023). Gamification in mobile-assisted language learning: a systematic review of Duolingo literature from a public release of 2012 to early 2020. *Computer Assisted Language Learning*, 36(3), 517–554.

45. Sudina, E., & Plonsky, L. (2024). The effects of frequency, duration, and intensity on L2 learning through Duolingo. *Journal of Second Language Studies*, 7(1), 1–43.

46. Vladova, G., Ullrich, A., Bender, B., & Gronau, N. (2021). Students' Acceptance of Technology-Mediated Teaching – How It Was Influenced During the COVID-19 Pandemic in 2020: A Study from Germany. *Frontiers in Psychology*, 12.

47. Yufei, L., Saleh, S., Jiahui, H., & Abdullah, S. M. S. (2020). Review of the Application of Artificial Intelligence in Education. *International Journal of Innovation, Creativity and Change*, 548–562.

48. Zeng, C., & Fisher, L. (2024). Opening the "Black Box": How Out-of-Class Use of Duolingo Impacts Chinese Junior High School Students' Intrinsic Motivation for English. *ECNU Review of Education*, 7(2), 283–307.

49. Zou, B., Du, Y., Wang, Z., Chen, J., & Zhang, W. (2023). An Investigation into Artificial Intelligence Speech Evaluation Programs with Automatic Feedback for Developing EFL Learners' Speaking Skills. *SAGE Open*, 13(3).

50. Zou, B., Liviero, S., Hao, M., & Wei, C. (2020). *Artificial Intelligence Technology for EAP Speaking Skills: Student Perceptions of Opportunities and Challenges* (pp. 433–463).