



doi <https://doi.org/10.58256/5pmpxd51>



Research Article

Section: Literature, Linguistics & Criticism



Published in Nairobi, Kenya
by Royallite Global.

Volume 5, Issue 4, 2024



Article Information

Submitted: 23rd March 2024

Accepted: 29th May 2024

Published: 1st July 2024

Additional information is available at the end of the article

<https://creativecommons.org/licenses/by/4.0/>

ISSN: 2708-5945 (Print)

ISSN: 2708-5953 (Online)

To read the paper online,
please scan this QR code



How to Cite:

Khasawneh, M. (n.d.). Exploring the influence of gender variation on the use of language learning apps in foreign language skill improvement. *Research Journal in Advanced Humanities*, 5(4). <https://doi.org/10.58256/5pmpxd51>

Exploring the influence of gender variation on the use of language learning apps in foreign language skill improvement

Dr. Mohamad Ahmad Saleem Khasawneh, Assistant Professor, Special Education Department, King Khalid University, Saudi Arabia
*Correspondence Email: mkhasawneh@kku.edu.sa.

<https://orcid.org/0000-0002-1390-3765>

Abstract

Gender variation emerges as one of the relevant concepts in the domain of language education because it facilitates understanding individuals' approaches to language learning, including the adoption and use of technology. The current study, with a focus on language learning technology, aims to explore how gender variation influences learners' use of language learning apps to improve their language skills. To achieve the study's objective, we adopted a mixed research methodology. We purposefully selected one hundred and forty-three (146) foreign language students for this research. Using mixed methods, all the students participated in the quantitative survey, while only four students participated in the qualitative part of the research. The participants' responses to the first research question revealed that gender variation is evident in some aspects but less so in others. There was a clear gender difference in preference and confidence in the use of language learning apps (LLAs). In terms of preference, the male respondents (mean = 4.1) show that they have a stronger preference for gaming LLAs than collaborative and communication LLAs. The females also show interest in using gaming LLAs, but with a relatively low mean score (mean = 2.9), indicating that the females may be consistent in their preference for collaboration and communication. The male students' mean score (4.6) in regard to the fifth survey item demonstrated strong confidence in using LLAs compared to their female counterparts (mean = 4.4). While there was moderate gender variation in regards to app navigation and the type of language skill improved using LLAs, gender variation is absent in terms of frequency in the use of LLAs among the respondents (both genders).

Keywords: gender variation, language learning apps, language skill improvement



© 2024 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY-NC-SA) license.

1.0 Introduction

One of the positive impacts of the presence of technology in the domain of language education is that it has paved the way for easy teaching and learning of languages. Today, learning a language does not necessarily require the presence of classroom language teachers. Students can learn languages regardless of location and time. While students may face the challenge of understanding instantly what the classroom teacher teaches or have limited time for understanding different concepts while lecturing, language learning apps help to bridge these gaps as they provide the students with flexibility and a personalized learning experience. Note that the learning experiences of students differ based on certain factors. One of these factors, gender variation, creates a remarkable difference in how students select and use these language-learning apps.

Meanwhile, Guaqueta and Castro-Garces (2018) define language learning apps (LLAs) as all apps designed for language learning and the improvement of various language skills. According to Guaqueta and Castro-Garces (2018), LLAs are didactic digital tools that combine technology with instructional language principles. However, these features allow users to learn and, at the same time, have fun using these apps to learn. Various language learning apps exist, each with unique development methods. Some apps are solely developed for writing improvement, while some are for speaking improvement. Some may also differ based on the interactive features present in their interface.

It is widely acknowledged that gender variation can significantly influence language learners' choices or preferences for LLAs. In simpler terms, male and female language learners may have distinct opinions and preferences when it comes to using apps based on factors such as the type, features, and interactive components of the app (Pokrivcakova 2019). This influence extends to their selection of LLAs for improving specific language skills. A deeper exploration of the effects of gender variation on LLAs reveals that it not only impacts the use of these apps but also shapes the learning style, engagement, and motivation associated with their use.

2.0 Literature Review

Given the numerous empirical studies on foreign language learning, the majority of attention has been focused on using technology to facilitate the language learning process of learners. These works explored different technologies, including language learning apps. As such, it is relevant to review some of these studies to provide more insight into the understanding of the current research's objective.

2.1 Overview of Language Learning Apps (LLAs)

Technology, a ubiquitous part of our daily lives, is often seen as a problem-solving tool. Language learning apps (LLAs) are a prime example of this, providing a platform for users to enhance their language skills. As Guaqueta & Castro-Garces (2018) point out, LLAs are digital tools that blend technology with instructional language principles, making them a crucial part of modern language learning.

LLAs can take the form of either mobile apps or system apps. Mobile apps, as defined by Gangaiamaran & Pasupathi (2017), are software applications designed for language learning and run on mobile devices like iPhones and tablets. System apps, on the other hand, are also software applications but are integrated into larger learning management systems. For the purpose of this research, we will be focusing solely on mobile apps.

Studies on the classification of mobile apps have categorized them based on specific criteria, such as features (Metruk, 2021), language level (Gangaiamaran & Pasupathi, 2017), and learning approach (Roberts, 2011). Based on the 'feature category,' Metruk (2021) identified gaming apps as one of the

most popular apps used by language learners. Nevertheless, Ishaq et al. (2011) maintained that gaming software applications integrate both fun and language learning principles, enabling users to have fun while learning languages. Categorizing mobile apps based on the language level, Gangaiamaran and Pasupathi (2017) identified three types of mobile apps. They include apps for primary learners, apps for secondary learners, and apps for tertiary learners. The first category contains apps designed for language beginners. These apps focus on facilitating the basic vocabulary, grammar, and phrases of users who do not have prior knowledge of a particular language. Secondary learners' apps, in contrast to primary learners' apps, cater to individuals with some language proficiency who require additional practice to enhance their language skills. Additionally, Gangaiamaran and Pasupathi (2017) revealed that tertiary learners develop apps specifically for college students.

2.2. Impacts of LLA in Language Setting

LLAs (Learning Language Assistants) are a must in language settings due to their teaching capacity. Nonetheless, this kind of language learning is unlike conventional methods because it can meet learners' language learning styles and preferences. Scholars have made different efforts to try out LLA using different methods. A study by Luef et al. (2019) contends that LLAs contribute to some of the skills that are essential to language learners. These skills comprise cultural, linguistic, communication, and collaboration, among others.

A study by Kim and Kwon (2012) contends that LLA gives language learners a customized language learning experience. Inversely to the old-time language learning system, language learners are optional to be in the classroom for language learning. As stated by Luef et al. (2019), research proves the fact that language learners can develop their language skills faster than the ones who solely depend on the traditional classroom setting. Besides that, the study by Kaur et al. (2023) recognized LLA as an adaptive learning system that allows language learners to understand their learning styles and to improve their learning process. Researchers, Katsaris and Vidakis (2021) realized that this technology is structured to help learners learn by first assessing their abilities and then putting them on a suitable learning path of the app.

In terms of language skill improvement, various studies such as Kacetyl & Klímová (2019), Aminatun & Oktaviani (2019), Liu (2009), and Alzatma & Khader (2020) reveal that LLAs improve various language proficiencies of language learners. An investigation by Liu (2009) claimed that the students in the experimental group experienced the development of their listening and speaking skills using the app 'HELLO.' Aminatun and Oktaviani's (2019) study on the use of the learning app 'Memrise' bears similarities to this investigation. However, the scholarly work emphasized that the mobile device demonstrated the capability of improving students' vocabulary skills. Apart from 'Memrise', 'Duolingo' is also considered among the popular apps that not only facilitate vocabulary development but also aid learners in improving their listening skill (Putri & Islamiati, 2018), speaking skills (Hafifah, 2021) and writing skills (Kurniadi & Suprpto, 2023).

As a relevant tool in the domain of language education, LLA proves to engage and motivate students, leading to an effective language learning process. For instance, the use of gaming apps provides learners with engaging activities. And learners derive enjoyment from participating in these activities. Studies (Bems et al., 2016; Gamlo, 2019; Alamer, 2015; and Guaqueta & Castro-Garces, 2018) have shown that students who integrate LLAs into their language learning journey exhibit a higher degree of motivation and enthusiasm for language learning compared to those who do not.

Another significant impact of LLAs in language learning settings is providing language learners with convenient access to various language resources. However, this feature enables users to utilize

various apps anytime and anywhere. This limits learners to solely relying on the classroom teacher's lessons. According to Ahmadi (2018), it allows for autonomous learning, allowing language learners to explore a variety of language contents.

LLAs have continued to serve as both teaching and learning tools. Utilizing LLAs as learning tools offers learners numerous benefits. However, their ability to cater to some of the learners' learning needs makes them popular in the field of language education.

2.2 Gender Variation and Language Learning Apps

With the widespread use of LLAs in language settings, there have been investigations into how individuals interact with and adopt these apps. A study by Bouzayenne (2023) revealed that gender variation is one of the factors that influence individuals' attitudes or interactions toward the utilization of mobile apps. It is noteworthy that the number of studies on gender was relatively low compared to earlier studies on LLAs. Nevertheless, many studies on LLAs have only focused on effectiveness, challenges, functionalities, and user perspectives. However, as scholars continued to explore digital learning, they began to pay attention to gender variation.

A study by Brown (2018) revealed an important issue in regard to gender variation in the use of LLAs. The scholarly work reported that usage patterns and preferences among language learners are core factors that result in gender variation in LLA use. According to Brown et al. (2010), these expectations may vary across various cultures. Al-Fahad (2009) noted that there are already stereotypes unconsciously developed by the different societies on how males and females should adapt to technology. Additionally, a separate study by Hilao and Wichadee (2017) found that gender variation in the use of LLAs does not influence the learning outcomes of both male and female language learners. In other words, both genders may have a preference for using a specific LLA in language learning, but they may end up achieving the same language learning goal while using the LLA of their choice.

Many researchers have found evidence of differences between men and women in how they use LLAs to learn languages. However, some studies, like Jambulingam and Sorooshian (2013) and Hilao and Wichadee (2017), agree that there are no differences between men and women in how well LLAs work for language learners. This indicates that both male and female learners have similar perceptions of the usefulness of using language learning apps.

2.4 Gap in the Literature

As an essential issue in the domain of language education, several scholars have provided arrays of evidence from their studies to support that gender variation influences technological use. However, not quite a few investigations have focused on the impact of gender variation in regards to how language learners use language learning apps to improve their language skills. As such, this research is dedicated to bridging this gap in the literature, providing further support for gender variation in the aspect of the use of LLAs in language skill improvement.

2.5 Research Question

- A. To what extent does gender variation influence students' learning experiences regarding the use of LLAs in language skill improvement?
- B. How does gender variation influence learners' use of language learning apps in improving their language skills

3.0 Research Methodology

A. Research Design

This research adopted a mixed research methodology, which integrates both quantitative and qualitative research methods. The essence of this methodology is to provide sufficient evidence on whether gender variation has any impact on how students use LLAs to improve their language skills.

B. Instrument

We used a closed-ended questionnaire and an interview to collect data from the selected participants based on the type of research methodology we adopted. However, we collected the quantitative data from the questionnaire and the qualitative data from the interview. Researchers use questionnaires to gather extensive data sets from research participants. However, they do not provide in-depth thoughts and explicit perceptions of respondents on specific issues (Xue, 2015). This paves the way for the use of interviews in this research. Interviews allow for the extraction of more profound insights from the respondents, enhancing our understanding of the data presented in the questionnaire. We developed the survey items in the questionnaire using a 5-point Likert scale.

C. Participants

We selected a total of 145 foreign language learners from various online platforms. We made use of the purposive sampling technique in our selection, meaning that participation was restricted to only those people who met the specified criteria. These criteria comprise individuals who fall in the age bracket of 18 – 35 years old, daily users of LLA, learners of foreign languages, and who agree to provide informed consent by signing the consent form. Furthermore, participants were also given a formal letter, which included emails, stating clearly the objectives of the questionnaire and the value of the responses. We then delivered the participants in-depth instructions about how to answer survey questions. Out of the one hundred and forty-five students chosen, only one hundred and thirty-six responded to the emails and expressed their willingness to participate in the research. Therefore, we collected data for the research from 136 respondents, comprising eighty-three females and fifty-three males.

D. Data Collection

As previously mentioned, we collected data for the research using a structured questionnaire. The first research question, which focuses on revealing the extent to which gender variation influences the learning experience of students using LLAs for language skill improvement, was the focus of this questionnaire, comprising 10 survey items. The survey received 100% responses from the participants, indicating a significant level of engagement and willingness to participate from the students. Conversely, we conducted a semi-structured interview to elucidate and comprehend the participants' questionnaire responses. After collating the research's data, we further analyzed the data generated from the quantitative research using the Statistical Package for the Social Sciences (SPSS) for Windows version 19.0. This integrates the use of descriptive statistics (mean, standard deviations, and significance value) to answer the first research question. In this research, we transcribed and analyzed the interview thematically.

4. Results

This section presents and analyses the data generated from the research participants’ responses. Meanwhile, the following are the survey items that were developed under the first research question.

- i. How frequent do you use LLAs?
- ii. Do you prefer gaming LLAs than collaborative and communication LLAs?
- iii. Does LLAs motivate you?
- iv. Does the use of LLAs impacts on your language learning experience?
- v. How confident are you in using LLAs to improve your language skill?
- vi. Does the use of LLAs improve your various language skills?
- vii. Do LLAs improve your productive skills than receptive skills?
- viii. Base on your experience, does the use of LLAs assures better learning outcome?
- ix. Do you find it difficult to navigate the interface of some LLAs?
- x. Do you encounter app attrition while using LLAs in language learning?

Fig 1: How frequent do you use LLAs?

The chart represents the responses of the research participants on the frequency of using language learning apps. The essence of including this particular survey item is to understand how consistent language learners integrate LLAs in learning language. Obviously, there is a high degree of usage of LLAs, as presented in the chart above. However, it can be seen that both genders have almost similar results in terms of using LLAs frequently (71.70% and 72.3%). However, few number of the population from both genders acknowledged that they occasionally (17.0% and 20.5) make use of these apps. Compared to the previous groups, a few respondents (both male and female population, respectively) attested that they ‘rarely’ and ‘never’ use LLAs. In light of this, it can be concluded that there is no gender variation in terms of frequency of usage. In other words, the use of language learning apps for language learning is rampant in both genders.

Table 1: Descriptive Statistics Table for the survey items.

Item	Gender	Mean	Std.	Sig.
	Male	4.1	0.8	Significant
	Female	2.9	1.0	Significant
	Male	4.2	0.8	Moderate
	Female	4.5	0.7	Moderate
	Male	3.9	0.9	Moderate
	Female	4.0	0.9	Moderate
	Male	4.6	0.5	Significant
	Female	4.4	0.6	Significance
	Male	4.1	0.7	Moderate
	Female	4.3	0.6	Moderate

	Male	3.9	0.9	Moderate
	Female	4.1	0.7	Moderate
	Male	4.0	0.9	Moderate
	Female	4.2	0.8	Moderate
	Male	4.0	0.9	Moderate
	Female	3.6	1.0	Moderate
	Male	3.7	0.9	Moderate
	Female	3.9	0.8	Moderate

The table above represents a descriptive statistical analysis of the remaining nine survey items. The second survey item revealed gender variation in the students' choice of LLAs. As shown above, the mean score of the male gender respondents shows that they have a stronger preference for gaming LLAs than collaborative and communication LLAs. On the other hand, the females also show interest in using gaming LLAs, but with a relatively low mean score, indicating that the females may be consistent in their preference for collaborative and communication LLAs.

While there was evident gender variation in the preferred type of LLAs, there appeared to be no variation in the motivational aspect of LLA use. Both genders' mean scores reveal a relatively similar pattern. The findings of the third survey are also similar to those of the fourth, as the respondents acknowledged the impacts of using LLAs in language learning. When it comes to confidence while using LLAs, male participants reported higher agreement than their female counterparts. The male participants' mean score reveals a strong acknowledgment of confidence in using language learning apps. Although the females' mean score is also high, it is slightly lower than that of their male counterparts.

Additionally, there is a moderate response among the participants (both males and females) to the use of LLAs to improve their various language skills (reading, writing, listening, and writing skills). In other words, both genders acknowledge the effectiveness of LLAs. In terms of the language skills both genders perceive as enhanced by LLAs, the female participants' high mean score indicates that LLAs enhance their productive language skills (speaking and writing) more than their receptive skills (listening and reading). The male respondents' mean score (3.9) indicates less support for the idea that LLA improves productive language skills than receptive. On the other hand, there was a consensus among the participants that LLAs assure better learning outcomes.

Participants' responses also revealed essential issues with the use of LLAs for both genders. App navigation and attrition are two examples. Based on their responses, females find it slightly tricky to navigate the interface of some LLAs (mean = 3.6) compared to males (4.0). Despite this challenge, both genders acknowledge that they encounter app attrition (3.7 and 3.9, respectively) while using the app.

4.1 Qualitative Results

For the qualitative analysis, four respondents were interviewed: two male foreign language learners (MFL 1 and 2) and two female foreign language learners (FFL 1 and 2). Based on their responses, significant themes were drawn and further analyzed. However, these themes were organized and presented in the table below.

Table 2: Summary of Qualitative Data

Theme	Sub-theme	Examples
Productive Language Skill Improvement	<ul style="list-style-type: none"> - Speaking skill - Writing skill 	The app provides language exercise, allowing me to practice my speaking proficiency.
Receptive Language Skill Improvement	<ul style="list-style-type: none"> - Listening skill - Reading skill 	The audio feature allows me to practice listening proficiency.
Motivation	<ul style="list-style-type: none"> - Social interaction - engagement 	It allows me to interact and practice my language proficiency (with people).
LLAs Usability and Challenge	<ul style="list-style-type: none"> - App attrition - App navigation 	..too many activities do hold me back from finishing my language course most times while using the app.
Gender-based Preference	<ul style="list-style-type: none"> - Gamified feature - Competitive feature - Communicative feature 	I prefer apps with achievement and reward system.

A. Productive Language Skill Improvement

The interview conducted in this research revealed that the use of language learning apps enables both female and male learners to improve their productive language skills. Productive language skills include speaking and writing skills. It can be recalled from the quantitative analysis that female respondents believe that LLAs improve their speaking and writing skills; as one female respondent stated,

‘I like using LLAs, especially ‘Duolingo to learn foreign language speaking of any foreign language speaking. I also noticed that this app allows me to practice as often as I want. The app provides language exercise, allowing me to practice my speaking proficiency.’ FFL 2

B. Receptive Language Skill Improvement

Just like the male and female respondents acknowledged the improvement of their productive language skills using language learning skills, both genders also attested that LLAs facilitate the improvement of receptive language learners. As revealed in the quantitative analysis, the male respondents were of a more robust view than the females that LLAs improve their receptive skills. This is also verified from the statement made by one of the male respondents.

‘I use a particular LLA for my language learning. And there are interesting features in the app that help me to improve my language skill. For instance, the audio feature allows me to practice listening proficiency and my reading skill is also improve while constantly reading every text present in the app.’ MFL 1

C. Motivation

Another paramount importance of the use of LLAs is the facilitation of motivation among students. Some features (social interaction) found in these apps motivate students to further engage in language learning using these apps. Additionally, the effectiveness of these apps also motivates students to use these apps to learn any language of their choice. Meanwhile, both fworthanoting respondents have similar positive

responses in regards to the facilitation of motivation with the use of LLAs. The following extract from the interview further validates this postulation.

'I started using these apps constantly after seeing that it helps me in learning effectively. Also, meeting people; both native speakers and learners like me allow me to interact and practice my language proficiency.' MFL 2

D. LLAs Usability and Challenge

Compared to their female counterpart, male respondents demonstrated a greater inclination towards confidently using and navigating the LLAs interface. However, it can be seen that both genders experience challenges in terms of app attrition in the quantitative analysis. In other words, both genders attested that they sometimes find it hard to finish their language courses while using LLAs, as stated by one of the respondents;

'I only use the app whenever I have the chance. You know too many activities do hold me back from finishing my language course most times while using the app.' FFL 1

5. Gender-based Preference

The results from both quantitative and qualitative analyses prove that preference is another factor that causes gender variation in the use of LLAs. As revealed in the first analysis, male participants prefer using gaming LLAs to learn language, while female participants prefer collaborative and communicative LLAs. Some studies have maintained that certain prevalent features, such as reward systems, competitive and task-oriented features, and leaderboards, among others, prompt males' preference for gaming LLAs. The following extract from the participant validates this postulation.

I do lose interest easily while using some apps to learn but I prefer apps with achievement and reward system; it makes me glue to the fun game and as well as allowing me to easily learn. MFL 2

4.2 Discussion

Language learning application systems have remained a significant component of global foreign language education. Foreign language learners have consistently used these applications to improve their foreign language skills. In this research, our concern has been to explore gender variations among foreign language learners in the use of these foreign language learning applications. The findings in this research have provided support for the notion that there is gender variation in the use of language learning apps. Language learning apps (LLAs) are software applications that aim to enhance and learn a variety of language skills.

This study adopted a mixed methodology to gain insight from both male and female research participants on how gender variation can influence the use of LLAs in the development of various language skills. However, the responses from the participants to the first research question revealed that there are some aspects where the gender variation is more prominent. At the same time, there are some areas where it is not apparent or totally absent. For example, there were gender differences in terms of LLA preferences. Recall that the male respondents' mean score in the second survey item indicates a stronger preference for gaming LLAs over collaborative and communication LLAs.

Another area where there was an apparent gender variation was confidence in using LLAs.

According to the results of this research, male students demonstrated strong confidence in using LLAs compared to their female counterparts. This finding is also consistent with Yau and Cheng's (2012) findings. The findings from the scholarly work revealed that male language learners have greater confidence in using technology in language learning than female students in higher education in Hong Kong. A similar study by Zhou and Xu (2017) also attested to the prevalence of male language learners having expertise and confidence in using technology.

Meanwhile, there was less gender variation in some areas, such as motivation, language skill improvement, and the impact on learning outcomes. However, both genders acknowledged that the use of LLAs motivates them and assures a better learning outcome. In regards to language skill improvement, both genders identified the type of language skill they believe LLAs enable them to improve on. While the female respondents attested that LLAs improve their productive language skills (speaking and writing), the male respondents believed that LLAs improve their receptive language skills (listening and reading). Despite the effectiveness of LLAs, both genders acknowledged facing challenges in using these apps. The female respondents asserted, with a mean score of 3.6, that they find some LLAs' interfaces slightly more challenging to navigate than those of males (4.0). However, there was consensus among the respondents (both genders) that they do encounter app attrition. According to Tuncay (2020), some language app users need help to complete their courses while using the apps to learn languages. One of the many factors that cause this is a shift in interest, as seen from the response of one of the respondents. Despite extensive research on various language learning apps, the issue of mobile app attrition among language users needs more attention (Tuncay, 2020). Many language app users need help to complete their courses while using the learning app. Several factors, such as lack of motivation and engagement, user experience and interface design, and content relevance, among others, can contribute to LLAs attrition. There may also be a change in user interest and priority, leading to abandonment or decreased engagement with any language learning app.

5. Conclusion

So far, this study has been able to reveal how gender variation influences the use of language learning apps for various language skill improvements. Firstly, we describe LLAs as didactic digital tools that integrate technology and instructional language principles. As such, their features allow users to learn languages and, at the same time, have fun using these apps. Language learners tend to demonstrate differences in their use of these apps due to their disparate designs. Language learners claim that gender variation influences their choice or preference for LLAs, leading to individual differences in their use of these apps. In other words, male and female language learners may have different opinions and preferences about using these apps based on the type, usability, and components present in them. This also extends to their choice of LLAs for improvement of a particular language skill, such as productive and receptive language skills. The findings of this research revealed that there are aspects where gender variation is more prominent and aspects where it is less noticeable or absent. Based on these findings, this research provides further support for other existing studies regarding the gender factor in the use of language learning apps.

Acknowledgments

The authors extend their appreciation to the Deanship of Scientific Research at King Khalid University for funding this work through Large Research Groups under grant number (RGP.2 / 192 /45).

Reference

- Ahmadi, D. M. R. (2018). The use of technology in English language learning: A literature review. *International journal of research in English education*, 3(2), 115-125.
- Alamer, A. (2015). The role of EFL learners' motivation in mobile language learning. In *Comunicación presentada en el First International Conference on Theory and Practice*. Adelaida: Australia.
- Al-Fahad, F. N. (2009). Students' attitudes and perceptions towards the effectiveness of mobile learning in King Saud University, Saudi Arabia. *Online Submission*, 8(2).
- Alzatma, A. A., & Khader, K. (2020). Using mobile apps to improve English speaking skills of EFL students at the Islamic University of Gaza. *Linguistics*.
- Aminatun, D., & Oktaviani, L. (2019). Memrise: Promoting students' autonomous learning skill through language learning application. *Metathesis: Journal of English Language, Literature, and Teaching*, 3(2), 214-223.
- Berns, A., Isla-Montes, J. L., Palomo-Duarte, M., & Doderio, J. M. (2016). Motivation, students' needs and learning outcomes: A hybrid game-based app for enhanced language learning. *SpringerPlus*, 5, 1-23.
- Bouzayenne, A. (2023). Learners' Language Learning Style Preferences, Class Level, Gender, and Using Mobile Apps for EFL Learning Among Tunisian University Students. *Journal of Foreign Language Teaching and Learning*, 8(2), 127-149.
- Brown, I. (2018). Gender differences in the use of smartphones and iPhones for language learning. *言語文化研究*, 38(1-1), 179-209.
- Brown, S. A., Dennis, A. R., & Venkatesh, V. (2010). Predicting collaboration technology use: Integrating technology adoption and collaboration research. *Journal of management information systems*, 27(2), 9-54.
- Gamlo, N. (2019). The Impact of Mobile Game-Based Language Learning Apps on EFL Learners' Motivation. *English Language Teaching*, 12(4), 49-56.
- Gangaiamaran, R., & Pasupathi, M. (2017). Review on use of mobile apps for language learning. *International Journal of Applied Engineering Research*, 12(21), 11242-11251.
- Goswami, A., & Dutta, S. (2015). Gender differences in technology usage—A literature review. *Open Journal of Business and Management*, 4(1), 51-59.
- Guaqueta, C. A., & Castro-Garces, A. Y. (2018). The use of language learning apps as a didactic tool for EFL vocabulary building. *English Language Teaching*, 11(2), 61-71.
- Haffah, H. (2021). The effectiveness of Duolingo in improving students' speaking skill at Madrasah Aliyah Bilingual Batu school year 2019/2020. *Language-Edu*, 10(3).
- Hilao, M. P., & Wichadee, S. (2017). Gender differences in mobile phone usage for language learning, attitude, and performance. *Turkish Online Journal of Distance Education*, 18(2), 68-79.
- Hou, Y. J. (2019). Gender difference in language learning with technology. In *Learning and Collaboration Technologies. Designing Learning Experiences: 6th International Conference, LCT 2019, Held as Part of the 21st HCI International Conference, HCII 2019, Orlando, FL, USA, July 26–31, 2019, Proceedings, Part I 21* (pp. 256-265). Springer International Publishing.
- Ishaq, K., Zin, N. A. M., Rosdi, F., Jehanghir, M., Ishaq, S., & Abid, A. (2021). Mobile-assisted and gamification-based language learning: a systematic literature review. *PeerJ Computer Science*, 7, e496.
- Jambulingam, M., & Sorooshian, S. (2013). Usage of mobile features among undergraduates and mobile learning. *Current Research Journal of Social Sciences*, 5(4), 130-133.
- Kacatl, J., & Klímová, B. (2019). Use of smartphone applications in english language learning—A

- challenge for foreign language education. *Education Sciences*, 9(3), 179.
- Katsaris, I., & Vidakis, N. (2021). Adaptive e-learning systems through learning styles: A review of the literature. *Advances in Mobile Learning Educational Research*, 1(2), 124-145.
- Kaur, P., Kumar, H., & Kaushal, S. (2023). Technology-assisted language learning adaptive systems: a comprehensive review. *International Journal of Cognitive Computing in Engineering*.
- Kim, H., & Kwon, Y. (2012). Exploring smartphone applications for effective mobile-assisted language learning. *멀티미디어 언어교육*, 15(1), 31-57.
- Kurniadi, D., & Suprpto, S. (2023, November). UTILIZING DUOLINGO AS A TECHNOLOGICAL TOOL FOR ASSESSING STUDENTS' WRITING SKILLS IN EFL CONTEXT. In *UNNES-TEFLIN National Conference* (Vol. 5, pp. 209-219).
- Liu, T. Y. (2009). A context-aware ubiquitous learning environment for language listening and speaking. *Journal of computer assisted Learning*, 25(6), 515-527.
- Luef, E. M., Ghebru, B., & Ilon, L. (2019). Language Proficiency and Smartphone-aided Second Language Learning: A look at English, German, Swahili, Hausa and Zulu. *Electronic Journal of E-Learning*, 17(1), pp25-37.
- Metruk, R. (2021). The use of smartphone English language learning apps in the process of learning English: Slovak EFL students' perspectives. *Sustainability*, 13(15), 8205.
- 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.
- Putri, L. M., & Islamiati, A. (2018). Teaching listening using Duolingo application. *Journal of English Education*, 1(4), 460.
- Robert, G. J. (2011). Emerging technologies: Mobile apps for language learning. *Language Learning and Technology*, 15, 2.
- Supriyanto, A. C., Putra, A. S., & Rakhmawati, F. (2023). Bias Gender on Language Learning: An Exploration on Gender Based Ability of Learning English as Foreign Language of The Secondary School Students. *The Journal Of English Teaching For Young And Adult Learners*, 2(2), 81-90.
- Tuncay, H. O. (2020). *App attrition in computer-assisted language learning: Focus on Duolingo* (Master's thesis, McGill University (Canada)).
- Wightman, M. (2020). Gender differences in second language learning: Why they exist and what we can do about it.
- Xue, S. (2015). Language learning strategy use of Chinese EFL students in relation to gender. *Sociology and Anthropology*, 3(5), 259-268.
- Yau, H. K., & Cheng, A. L. F. (2012). Gender difference of confidence in using technology for learning. *Journal of Technology Studies*, 38(2), 74-79.
- Yilmaz, B. O., & Ünlü, A. D. (2022). Digital Transformation and The Future of Work and Women: The Case of The European Union. In *Journal of Social Policy Conferences* (No. 82, pp. 337-356). Istanbul University.
- Zhou, G., & Xu, J. (2007). Adoption of Educational Technology: How Does Gender Matter?. *International Journal of Teaching and learning in higher education*, 19(2), 140-153.