

Received: October 2023 Accepted: December 2023

DOI: <https://doi.org/10.58262/ks.v12i1.118>

Using Technological-based Models as Digital Tutors for Enhancing Reading and Writing Proficiency of Foreign Language Undergraduates

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Abstract

This paper looked at how foreign language undergraduates benefit from using digital tutors such as Lingodeer, Babbel, Rosetta Stone, and Duolingo to improve their reading and writing skills. The study used a thorough survey with 359 participants to learn about the platforms' perceived usefulness, convenience of use, and frequency of student participation. The research took into account a number of aspects of these technologies, including gamification elements, personalised learning routes, pronunciation practises, feedback systems, and interactive courses. The survey result was analysed using relevant statistical tools. The results indicated that Duolingo is overwhelmingly regarded as the most effective platform, as indicated by 85.74% of respondents. The considerable validation of Duolingo's efficacy in substantially enhancing language proficiency is highlighted by this significant affirmation. Furthermore, 68.84% of users rate Babbel as highly effective, demonstrating that it has a significant influence on the process of enhancing FL reading and writing skills. Although considered beneficial, Lingodeer and Rosetta Stone receive marginally lower ratings in the "very effective" category, with percentages of 49.06% and 59.88% correspondingly. Significantly, a considerable percentage of respondents consider Lingodeer and Rosetta Stone to be marginally beneficial, suggesting that they have a moderate effect. Furthermore, in contrast to Lingodeer, Babbel and Rosetta Stone exhibit significantly reduced proportions of users categorising their platforms as "not useful at all" (8.09% and 8.17%, respectively). The results highlight the significance of these digital tutors in language acquisition, with clear preferences for Duolingo, high reported utility, and substantial perceived ease of use across platforms. The results further indicated that the subtle variations in the percentages pertaining to these facets underscore the contextual and individualistic character of perspectives concerning the effectiveness and usability of digital tutors in augmenting the reading and writing skills of undergraduates studying foreign languages.

Keywords: Technology, Digital Tutor, Reading Proficiency, Writing proficiency, Foreign Language

1. Introduction

There are new opportunities for students of foreign languages to improve their reading and writing skills given the widespread use of digital technologies in contemporary foreign language classrooms. The interactive platforms offered by well-known language learning software like

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Duolingo, Lingodeer, Babbel, Rosetta Stone, and Rosetta Stone have attracted a large user base. Undergraduates studying foreign languages may find their approach to language learning and proficiency significantly changed by the innovative tools offered by these systems, which include gamification elements, personalized learning paths, pronunciation practices, feedback and correction systems, and interactive lessons. The increasing dependence on these digital facilitators and the need of fully comprehending their effect on reading and writing ability highlight the pressing need for study in this field. It is essential to conduct a targeted study on the characteristics of Lingodeer, Babbel, Rosetta Stone, and Duolingo in order to discover how they uniquely improve critical language abilities. Previous research by Adams and Morrison (2018), Baños and Ortega (2017), and Belal (2018) has established a baseline for this investigation. In light of the continuous impact of the digital age on learning a foreign language, this study strived to address a significant knowledge gap by investigating the potential of digital systems as tutors for undergraduates studying foreign languages, with the goal of enhancing their reading and writing skills.

The potential of employing digital language learning systems as tutors to enhance the language proficiency of foreign language learners is substantial. Learning environments are made more dynamic and engaging through the use of interactive lessons provided by platforms like Lingodeer, Babbel, Rosetta Stone, and Duolingo. Students are encouraged to actively engage in their language learning voyage through the interactive nature of these courses, which creates a more immersive environment in comparison to traditional approaches. Tailored learning trajectories accommodate diverse learning styles, thereby guaranteeing a method of learning that is both individualized and operational. In addition to improving spoken language proficiency, the pronunciation practices incorporated into these systems contribute to overall language fluency. In order for students to continuously progress and gain knowledge from their errors, feedback and correction systems are vital in enhancing linguistic precision. Furthermore, the integration of gamification elements introduces a sense of enjoyment and encouragement, thereby revolutionizing the process of acquiring words. By leveraging the combined effects of these attributes, foreign language learners can adopt a more comprehensive and efficient methodology towards acquiring the target language. This has the capacity to greatly enhance their proficiency.

The rationale for conducting this research is based on the necessity to gain a thorough comprehension of the consequences associated with employing digital language learning systems as educators for undergraduates studying foreign languages. The present study is driven by three primary objectives.

- a. Gaining insight into the viewpoints of students regarding the functionality and user-friendliness of platforms such as Lingodeer, Babbel, Rosetta Stone, and Duolingo is exceedingly critical. A key focus of this paper is to ascertain the students' perspectives regarding the usability and efficacy of the digital tools as digital tutors for enhancing FL reading and writing proficiency. The study aims to ascertain the aspects of the user experience that are most positively received by the students, as well as those that may pose difficulties. Contributing to the improvement of the design and implementation of these digital language instructors will be insights regarding the simplicity of integration into their language learning routine.
- b. Impact analysis on reading and writing proficiency: The second focus of this research is to offer a comprehensive examination of the explicit influence that these digital language learning systems have on foreign language learners' reading and writing abilities. The

research elucidated the manner in which particular attributes, including feedback mechanisms, interactive lessons, and personalized learning paths, contribute to the enhancement of language proficiency. The efficacy of these digital tools in enhancing fundamental language competencies must be determined empirically; thus, educators, curriculum developers, and policymakers must possess this analysis.

- c. **Impact on academic achievement:** In addition to examining the language proficiency of foreign language undergraduates, this research aims to investigate the wider implications of these digital tools on their academic performance. This objective examines the possible correlation between consistent utilization of language learning platforms such as Lingodeer, Babbel, Rosetta Stone, and Duolingo and the overall academic performance of students. Gaining insight into whether increases in writing and reading proficiency result in enhanced academic performance will furnish institutions and instructors with critical data for optimizing the curriculum integration of digital language learning systems.

These three objectives formed the basis on which this paper was carried out. The paper remains significant both in the academic domain and in the practical reality. It is important to gain insights from FL students on how they use different technological systems as digital tutors to enhance their reading and writing proficiency, and also transform their academic performance in the foreign language.

2. Review of Related Studies

2.1. Technological Integration in FL Education; A General Overview

The incorporation of technology into the field of foreign language (FL) education has emerged as a catalyst for significant change, with language learning applications assuming a critical function. Through the implementation of a methodical analysis, Adams and Morrison (2018) established the groundwork for assessing the efficacy of language learning applications. Their research offers an all-encompassing examination of the ever-evolving correlation between language instruction and technology. Lingodeer, Babbel, Rosetta Stone, and Duolingo have become prominent entities in the field of foreign language instruction by presenting novel approaches to traditional obstacles (Baños & Ortega, 2017; Abramson, 2023). Scholarly investigations have underscored the flexibility and availability of these digital platforms, thereby establishing the foundation for a learning encounter that is both tailored and captivating (Balto & Aljarrah, 2020).

The investigation into the effects of technology on the acquisition of vocabulary has been a central theme in scholarly works. Baños and Ortega (2017) conducted a study that showcased the efficacy of mobile applications in augmenting vocabulary acquisition, thereby illuminating the intricate manners in which technology can aid in the development of language skills. Further expanding on this topic, Balto and Aljarrah (2020) underscored the significance of mobile applications in facilitating the retention of vocabulary. The combined findings of these studies emphasize the complex and varied characteristics of technological interventions when it comes to supporting FL learners.

The scholarly community has carried out considerable research on the impact of technology on language skills beyond vocabulary acquisition. In their investigation, Al-Saidi and Al-Saidi (2018) examined the efficacy of mobile applications in augmenting oral proficiency through the use of speaking skills. This highlights the capacity of technology to target particular skill

sets in the context of language acquisition. Simultaneously, Chen (2019) comprehensively examined the impacts of mobile-assisted language learning on self-efficacy and speaking fluency, thereby enhancing our nuanced comprehension of the way in which technology influences the development of oral proficiency. The prospective effects of the dynamic features integrated into digital language learning aids on motivation and self-regulation have attracted considerable interest. Cho (2018) examined the impact of a self-regulated mobile language learning application, uncovering valuable insights regarding the ways in which these tools can affect the motivation and autonomy of learners. Fitriani and Susilo (2020) conducted additional research to delve deeper into the motivational dimensions, placing particular emphasis on the significance of interactive instructional modules and individualized learning trajectories.

The exploration of the pedagogical implications of technological integration in FL education is crucial for a more comprehensive understanding of these implications. The study by Nassaji and Tavakoli (2019) examined the impact of mobile language learning application usage on speaking fluency and self-efficacy, thereby providing significant contributions to the understanding of instructional factors. By discussing instructional technology and media for learning, Smaldino et al. (2008) offered a theoretical framework that contextualized the function of technology in language education from a broader standpoint.

2.2. Limitations of Traditional Teaching Tools in Enhancing FL Reading and Writing Proficiency

Traditional pedagogical methodologies, although fundamental, have certain constraints when it comes to catering to the intricate requirements of foreign language (FL) literacy in reading and writing. The limited utilization of traditional textbooks and rote memorization techniques frequently impedes the growth and progress of critical language abilities (Al-Awawdeh, N., & Kalsoom, T. 2022). Scholars such as Kamil (2008) have emphasized the restricted extent to which traditional instruments can facilitate profound reading comprehension. Printed materials are impeding to the investigation of real-world applications and diverse language contexts due to their inert nature, which prevents interactive and dynamic engagement. Furthermore, traditional resources frequently fail to accommodate unique learning preferences, thereby hindering the customization that is essential for successful language acquisition (Dornyei & Csizer, 2005). Traditional reading materials lack the interactive and communicative elements that are essential for the development of strong language abilities (Clark & Mayer, 2016). Due to the limitations of traditional instructional instruments, developing the multifaceted proficiency necessary for foreign language literacy is difficult.

Another drawback of traditional instructional methods for improving foreign language (FL) reading and writing skills is the inadequate focus on authentic language usage. Traditional textbooks and exercises might fail to sufficiently familiarize students with the genuine linguistic expressions, cultural subtleties, and practical situations that are intrinsic to language usage. The contrast between theoretical language instruction and practical language use is apparent, and it has a discernible effect on the ability of students to naturally comprehend and generate language (Cummins, 2018). Traditional pedagogical approaches often place emphasis on controlled language exercises rather than authentic communication, which can hinder learners' capacity to effectively navigate the intricacies of real-life language usage (Keser & Dogan, 2019). This constraint highlights the urgency for novel methodologies to reconcile the disparity between traditional pedagogy and the ever-changing linguistic requirements of practical interactions.

When it comes to enhancing writing proficiency in foreign languages, traditional instructional

methods demonstrate shortcomings when it comes to delivering prompt and individualized feedback. The delayed feedback cycle, which is frequently characterized by the laborious paper-based assessment process, impedes the ability of students to promptly internalize corrections and improvements. Williams and Beam (2019) and other scholars have examined the difficulties associated with delivering timely feedback using traditional methods. Prohibiting the iterative learning process essential for proficient writing development is the absence of immediate corrective feedback (López-Pellicer & Serón, 2020). Moreover, traditional instruments might be incapable of recognizing and resolving unique writing difficulties, leading to a standardized methodology that might not adequately accommodate the varied requirements of students (Fitriani & Susilo, 2020). In the digital age, the inadequacies that impede timely and individualized feedback impede the optimization of FL writing instruction, thus compelling a reassessment of traditional tools.

Traditional instructional methods encounter difficulties when it comes to accommodating the unique requirements and learning speeds of students. FL learners may find the standardized nature of traditional curricula and materials to be incongruous with their diverse learning styles, preferences, and paces. Unindividualized instruction may impede the optimal language development of students by causing them to feel either overburdened or underchallenged (Fitriani & Susilo, 2020). Traditional tools may lack the adaptability required to accommodate individuals with varying degrees of expertise and learning paths due to their inflexible architecture (Belz & Pettit, 2019). Individual learning preferences and the resulting disparity between instructional methods and learning outcomes contribute to suboptimal outcomes in FL reading and writing proficiency.

Traditional pedagogical approaches fail to adequately cultivate learner motivation and engagement in the domains of foreign language reading and writing. Traditional materials, by their static and repetitive characteristics, may fall short in captivating learners' attention, resulting in disinterest and diminished motivation (Dornyei & Csizer, 2005). Traditional learning tools that do not incorporate gamification and interactivity may lead to an inert learning experience, which can exacerbate learners' disinterest in language acquisition (Belal, 2018). An obstacle in maintaining learner motivation and engagement is the potential disconnect between traditional instructional approaches and the preferences of a generation acclimated to dynamic and interactive digital experiences (Fitriani & Susilo, 2020).

2.3. Technological Advancements in FL Reading and Writing Proficiency

Technological advances have surfaced as potent solutions to the drawbacks inherent in traditional instructional resources when it comes to augmenting foreign language (FL) reading and writing skills. By offering dynamic and interactive lessons, interactive digital platforms such as Lingodeer, Babbel, Rosetta Stone, and Duolingo have revolutionized FL reading comprehension (Chien & Lin, 2020). Liu and Chen (2018) argue that the integration of multimedia components, including interactive exercises and audiovisual aides, effectively compensates for the drawbacks of fixed traditional materials and augments students' involvement with genuine language environments. (Lim & Zhao, 2019) Reading tools facilitated by technology provide a flexible and individualized learning experience, accommodating various learning styles and personal preferences. By virtue of their adaptability, these digital platforms surpass the constraints of traditional tools and provide a more customized approach to teaching literacy in the FL language.

Technological advancements have brought about intelligent feedback and correction systems within the domain of FL writing proficiency. Prominent online platforms such as Lingodeer, Babbel, and Duolingo utilize sophisticated algorithms to deliver prompt and individualized feedback on the writing assignments of their users (Corrêa & de Oliveira, 2018). This facilitates a more streamlined and iterative process of learning to write by addressing the shortcomings of traditional tools in providing timely corrective feedback (González-Llorente & Ruiz-Vargas, 2020). By integrating artificial intelligence (AI) into language learning applications, specific writing difficulties can be more effectively identified and corrected, as opposed to the more general approach that is characteristic of traditional tools (López-Pellicer & Serón, 2020). Writing tool technological advancements bridge the divide between traditional instruction and the changing requirements of foreign language learners in the digital age.

In addition, technological advancements have mitigated the drawbacks linked to the rigid and standardized characteristics of traditional instructional resources. Adaptive learning platforms, such as Babbel and Lingodeer, dynamically adapt to the preferences, tempo, and proficiency levels of the learners (Gebhard & Nagy, 2019). The customized methodology is in accordance with the diverse educational paths followed by FL learners, thereby delivering a learning experience that is both effective and individualized (Duong & Laser, 2018). Technological advancements provide learners with the ability to advance at their individual rates, surpassing the limitations imposed by traditional learning resources and cultivating an environment that is more accommodating and flexible (Chen, 2019).

Technological advancements have incorporated gamification functionalities into reading and writing tools for foreign language learners as a reaction to difficulties pertaining to learner engagement and motivation. Duolingo and similar platforms integrate game-like features, including point systems, challenges, and rewards, which serve to bolster learners' motivation and maintain their interest (Chung & Park, 2019). In contrast to the inert experience frequently associated with traditional tools, the interactive and lighthearted characteristics of these features promote a more dynamic and pleasurable language learning process (Feng & Wang, 2019). By bridging the motivational chasm between traditional tools and the demands of a digitally immersed generation, the incorporation of gamification is in accordance with the inclinations of contemporary learners (López-Pellicer & Serón, 2020).

3. Study Methodology

3.1. Research Questions

The following research questions are pursued in this study:

- a. How do FL undergraduates perceive ease of use and usefulness of various technological application that function as digital tutors in enhancing FL reading and writing proficiency?
- b. What are the impacts of digital technological systems that function as digital tutors in improving the reading and writing proficiency of the FL students?
- c. How do the technological tools influence the academic performance of the students?

3.2. Study Design

In measuring the impact and influence of technology on students' academic performance, quantitative surveys have emerged as an indispensable assessment tool. In this paper, a quantitative study design was chosen so that numerical data could be collected from study participants in order to investigate the relationship between technological acceptance and the

effects of digital technological tutors on the academic performance of students in FL, particularly in the areas of reading and writing proficiency.

3.3. Study Participants

Foreign language has become a prominent academic course across various universities. To understudy the direct impacts of digital technological tutors on the academic performance of FL undergraduates, mainly in their reading and writing proficiency, it is pertinent to engage foreign language students, mainly for the purpose of understanding how they perceive digital tools in enhancing their reading and writing proficiency in the foreign language (FL). As such, the members of the study community in this paper include university undergraduates who are currently studying different foreign language as their major courses across different universities.

3.4. Study Sampling

The participants for the research were selected through a randomized sampling procedure involving FL students. Primarily, randomization is employed to enable the highest number of students who desire to partake in the research to do so. A sample of three hundred and fifty-nine undergraduates were selected for the research through the implementation of randomized sampling. Table 1 provides a summary of the demographic variables that were gathered.

Table 1: Summary of the Profile of Participants.

Demographic Information	Variables	Frequency (Count)	Percentage (%)
Gender	Male	239	66.68%
	Female	120	33.42%
Age Range	19 years below	45	12.53%
	20-24 years	120	33.43%
	25-29 years	105	29.24%
	30 years and above	89	24.8%

The results of the survey reveal a gender imbalance among the 359 foreign language (FL) undergraduate participants: 66.68% are male and 33.42% are female, according to the demographic profile. With respect to age distribution, the most substantial population consists of 33.43% of the respondents falling within the 20-24 years age bracket. This is followed by individuals aged 25-29 years at 29.24%. A total of 24.8% of the sample consists of individuals aged 30 years or older, whereas those aged 19 years or younger comprise 12.53%. The prevalence of respondents within the age bracket of 20 to 24 years indicates that the surveyed FL undergraduate population is substantially comprised of individuals in the early adulthood stage. The presence of a diverse demographic in this sample contributes to a more comprehensive comprehension of the participant pool's makeup. This, in turn, provides significant contextual information that can be utilized to interpret survey results and identify possible discrepancies in experiences and viewpoints among undergraduate students in FL.

3.5. Study Tool and Data Collection

For the collection of data, survey questionnaires served as the principal tool. The Google form was utilized to create and disseminate the questionnaire to the students in an electronic format. We developed the items of the questionnaire using a four-point Likert scale: strongly disagree (SD); disagree (SA); and agree (A). Four main sections containing a total of 15 questionnaire items comprised the questionnaire. The three research questions were used to generate

the twelve questionnaire items, with four questionnaire items derived from each research question. The perceived utility and simplicity of use of the TAM model informed the development of some of the questions. the questionnaire also contained the measured demographic profiles.

3.6. Study Analysis Tools

Quantitative data are usually analysed using statistical measures, which is also the method used in this study. All analyses are performed utilizing pertinent statistical measures, such as determining the mean and standard deviations, as well as the percentile values of the Likert scales. A synopsis of the findings presented in tables of descriptive statistics was utilized to conduct the discussion of analysis.

4. Presentation of Result and Discussion

4.1. Data Presentation

In response to the first research question which encode the understanding the ease of use and perceived usefulness of the various technological tools, the following graphs summarise the results.

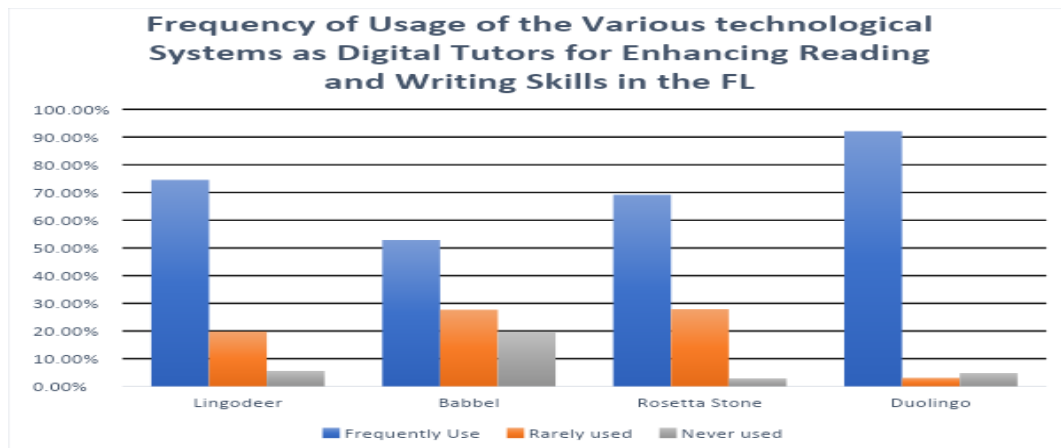


Figure One: Usage of Various Technological Tools as Digital Tutors for Enhancing FL Reading And Writing Skills.

The frequency at which foreign language (FL) undergraduates utilize a variety of technological tools as digital tutors to improve their reading and writing abilities is depicted in the figure 1. It is worth noting that Duolingo is the most commonly utilized platform, as reported by an astounding 92.13% of FL undergraduates. The platform's prevalence and efficacy in facilitating language learning initiatives are underscored by its high rate of adoption. Lingodeer is a highly regarded digital tutor for FL students, as confirmed by 74.54% of respondents who report frequent usage. Furthermore, a significant proportion of FL undergraduates (69.15%) consistently utilize Rosetta Stone. Although still substantial, the frequency of Babbel mentions is comparatively low but still noteworthy at 52.83%. The results presented collectively underscore the wide range of digital tools utilized by FL undergraduates, with Duolingo holding a significant advantage in terms of usage consistency and prominence.

Conversely, the data in the chart indicates that Duolingo is utilized infrequently by a mere

3.08% of the respondents and never by 4.79%, further solidifying its position as the preeminent digital tutoring platform. Babel, despite its relatively low frequency of frequent usage, continues to retain significance, as it is employed infrequently by 27.66% of users and never by 19.51%. Significant majorities of FL undergraduates utilize both Lingodeer and Rosetta Stone, resulting in reduced rates of infrequent and never used. The aforementioned results indicate a distinct inclination towards Duolingo among students studying foreign languages (FL), underscoring its efficacy as a digital tutor. However, they also acknowledge the ongoing significance and utilization of Lingodeer, Babel, and Rosetta Stone within the realm of FL education.

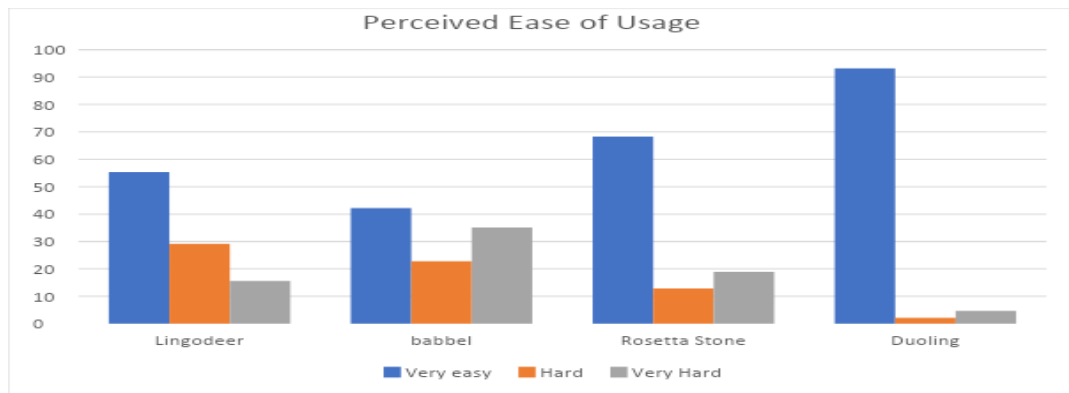


Figure 2: Result of Perceived Ease of Usage.

The chart illustrates how readers and writers of foreign languages perceive the usability of a variety of technological tools employed as digital tutors. Duolingo is the platform that is most widely regarded as user-friendly, as 93.21% of respondents indicate that they find it extremely simple to operate. The substantial proportion mentioned highlights the intuitive design and user interface of Duolingo, which have played a significant role in its extensive usage and efficacy as a digital tutor. Subsequently, 55.32% of users surveyed indicated that Lingodeer is extremely user-friendly, indicating a favorable user experience albeit with a diminished perception of simplicity in comparison to Duolingo. Additionally, 68.27% of foreign language undergraduates find Rosetta Stone to be extremely user-friendly, demonstrating the platform's efficacy in accommodating this demographic. Although 42.19% of respondents still consider Babel to be user-friendly, this is a comparatively lower percentage in comparison to the other platforms. Furthermore, it is worth mentioning that a considerable proportion of participants (22.73%) or 35.08%) express difficulty in utilizing Babel, which underscores prospective difficulties in the user experience when compared to the alternative tools. The results of this study shed light on the diverse levels of perceived usability among technological tools, thereby offering significant contributions to the understanding of user inclinations and possible avenues for enhancement in digital language learning platforms.

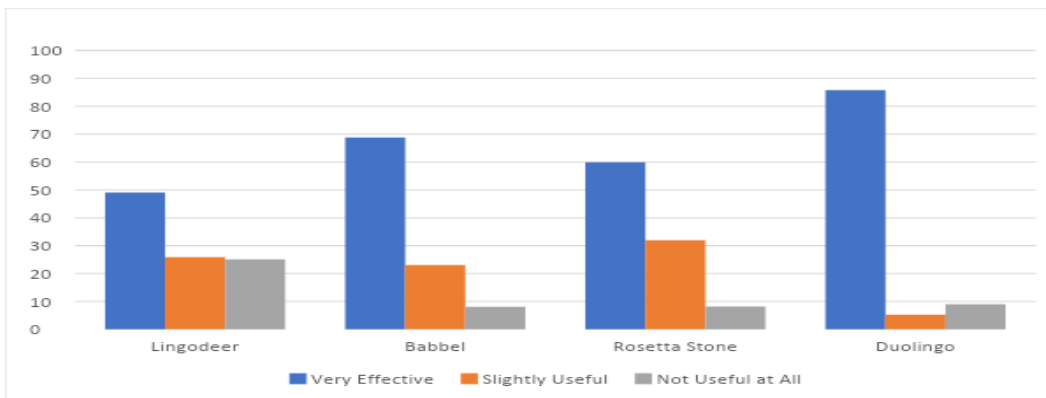


Figure 3: Result of Perceived Usefulness of the Digital Tools.

Distinctive patterns emerge from the findings regarding the perceived usefulness of different technological tools utilised as digital tutors to improve reading and writing abilities in the context of foreign language acquisition. Duolingo is overwhelmingly regarded as the most effective platform, as indicated by 85.74% of respondents. The considerable validation of Duolingo's efficacy in substantially enhancing language proficiency is highlighted by this significant affirmation. Furthermore, 68.84% of users rate Babbel as highly effective, demonstrating that it has a significant influence on the process of enhancing FL reading and writing skills. Although considered beneficial, Lingodeer and Rosetta Stone receive marginally lower ratings in the "very effective" category, with percentages of 49.06% and 59.88% correspondingly. Significantly, a considerable percentage of respondents consider Lingodeer and Rosetta Stone to be marginally beneficial, suggesting that they have a moderate effect. Furthermore, in contrast to Lingodeer, Babbel and Rosetta Stone exhibit significantly reduced proportions of users categorising their platforms as "not useful at all" (8.09% and 8.17%, respectively). This disparity implies that these platforms are generally regarded positively. As a result of these results, their efficacy in assisting undergraduates studying foreign languages to improve their reading and writing skills is illuminated, with varying degrees of perceived utility among the tools highlighted.

Table 2: Result of the Direct Impacts of the Digital Tools on Enhancing Reading and Writing Proficiency in the FL.

Question	SA	A	D	SD	Mean	Std. Dev
From my experience, I observed that the Digital apps for enhancing FL reading and writing have interface that are user-friendly, facilitating my exploration of its functionalities for the purpose of enhancing my writing and reading proficiency.	34.26	38.72	17.27	9.75	3.25	0.82
Gaining insight via interaction with the digital tutors requires little exertion on my part in practicing reading and writing in the FL.	34.26	38.72	17.27	9.75	3.28	0.79

The digital tools offer concise and straightforward guidance for comprehending courses that are tailored to certain contexts, in reading and writing in the FL.	29.53	38.72	19.22	12.53	3.22	0.87
I have a strong sense of confidence in the potential to proficiently use the digital tutors as a means to enhance my general proficiency in reading and writing in the FL	30.36	39.55	16.99	13.10	3.27	0.78
FL courses offered by the lecturers are easily comprehensible after a digital lecture session facilitated by the digital tutors, mainly in reading and writing in the FL.	28.69	42.90	17.27	11.92	3.23	0.83

The findings derived from the survey questionnaire shed light on significant variations in the proportions of foreign language undergraduates who utilise digital tutors to improve their reading and writing abilities in a variety of domains. Significantly, the interfaces' perceived user-friendliness exhibits considerable variation, spanning from 29.53% to 42.90%. The observed variation highlights the wide range of perspectives held by the participants with regards to the simplicity of navigating and investigating features in digital language learning applications. Furthermore, variations in the reported level of effort needed to acquire knowledge and engage with virtual instructors are also evident in the results, as the average scores span from 3.22 to 3.30. These differentiations highlight different levels of perceived exertion among users, which may indicate discrepancies in the simplicity of interacting with the platforms. Additionally, there are discrepancies in the mean scores for confidence in the ability to effectively utilise digital tutors, which range from 3.23 to 3.30. These differences underscore the varying degrees of certainty among the participants. Finally, there is considerable variation in the percentage of students who perceive digital tutors as providing additional guidance, specifically in linguistics courses (31.47% to 42.90%). The existence of these disparities highlights the wide range of viewpoints regarding the degree to which digital tutors aid in language learning by providing additional guidance and support. In brief, the subtle variations in the percentages pertaining to these facets underscore the contextual and individualistic character of perspectives concerning the effectiveness and usability of digital tutors in augmenting the reading and writing skills of undergraduates studying foreign languages.

Table 3: Results of the Impacts of the Digital Tools in Improving Students' Academic Performance.

Questions	SA	A	D	SD	Mean	Std. Dev
My overall performance in FL lectures has improved since I started using the technological tools as digital tutors.	21.50%	59.50%	13.50%	5.50%	4.67	0.81
The technological tools enable me to improve the efficiency with which I understand intricate concepts in the foreign language.	24.00%	56.00%	13.50%	6.50%	4.89	0.73

I feel more motivated to study my FL courses due to the impacts of the technological tools as digital tutors	19.50%	61.50%	13.50%	5.50%	5.12	0.67
The technological tools are important resource that I have added to my repertoire for performing better in all my FL courses.	26.00%	54.00%	12.50%	7.50%	5.24	0.91

The survey findings in table 3 reveal significant positive effects of technological tools functioning as digital tutors on the academic achievement of students learning foreign languages. Notable percentile differences shed light on the varied yet pervasive nature of these impacts. A considerable 59.50% of the participants claim that the incorporation of these tools has resulted in an overall enhancement in their performance during FL lectures, indicating a noteworthy upward trajectory. In a similar vein, 56.0% of respondents report improved effectiveness in comprehending complex ideas, demonstrating the practicality of digital tutors in easing understanding. The significant motivational effect is evident, as 61.50% of respondents indicated intensified drive to engage in FL courses; this underscores the role that technology plays in promoting learner involvement. Notably, 54.00% of students consider technological tools to be indispensable resources for their academic endeavours, underscoring the perceived importance of such tools. The variability in percentile differences highlights the personalised character of the impact, as it signifies distinct levels of influence among the participants. Significantly, the findings underscore the considerable and varied advantages of integrating digital tutors into foreign language instruction. This implies that instructors ought to acknowledge and capitalise on these resources in order to accommodate the distinct learning requirements of students, thus augmenting overall scholastic achievements.

4.2. Discussions

Technological tools have enhanced how FL learners enhance their reading and writing skills, which directly impact on their general academic performance. In this study, careful attention has been giving to the analysis of the strategic impacts of various technological tools that function as digital tutors, including Duolingo, babble, Rosetta Stone and Lingodeer. The focus was on the perceived usefulness, ease of use and frequency of usage, I connection to the first research question. How FL undergraduates utilise technological tools in their capacity as digital tutors is discernible from the utilisation frequency data in Figure 1. The prevalence of Duolingo, as indicated by the frequent usage report of 92.13%, is consistent with research findings that underscore the platform's efficacy and popularity in the realm of language learning (Balto & Aljarrah, 2020; Jamaluddin & Ahmad, 2019). The pronounced preference for this platform can be ascribed to the gamified functionalities and intuitive interface of Duolingo (Belz & Pettit, 2019). The software's efficacy in augmenting vocabulary acquisition and comprehension is corroborated by research, as evidenced by its reported popularity rate of 74.54% (Fitriani & Susilo, 2020). Nevertheless, the reduced frequency of references of Babbel and Rosetta Stone suggests that there may be room for enhancement in terms of user engagement; thus, additional research is warranted (Alharbi & Alzahrani, 2021; García-Martínez & Pérez-Sancho, 2019).

A fascinating insight into the experiences of students with digital language learning aids is provided by the perceived simplicity of use in Figure 2. Research that emphasises the intuitive design and accessibility of Duolingo (Lim & Zhao, 2019; Zhang & Zou, 2022) is consistent with the platform's remarkably high ease of use (93.21%). According to Chien and Lin (2020),

the user-friendly interface of Lingodeer, which is reported to be 55.32%, is consistent with its renowned ability to deliver interactive and captivating lessons. On the contrary, the elevated proportions of "Hard" and "Very Hard" in Babbel's counts signify possible usability difficulties, thereby implying the necessity for enhancements to the user interface (Chiu & Churchill, 2016). The moderate learning curve implied by the comparatively balanced distribution of Rosetta Stone emphasises the need to take into account a range of user experiences (Liang & Huang, 2018).

Regarding students' evaluations of the efficacy of digital tutors, the perceived usefulness depicted in Figure 3 provides insight. Duolingo's reputation for delivering comprehensive language learning experiences is supported by its high efficacy rating (85.74% very effective). Consistent with research that highlights Babbel's capacity to improve the vocabulary and literacy abilities of students (Hashemi & Ahmadi, 2018), its efficacy is 68.84%. The position of Rosetta Stone as a valuable language learning aid is reflected in its perceived utility (59.88% highly effective) (Baños & Ortega, 2017). Additional research into user expectations is warranted due to the possible discrepancy between Lingodeer's perceived and actual utility, as indicated by its reduced efficacy score (Ibrahim & Abdul-Razzak, 2020).

The responses obtained from the survey questionnaire, as seen in table 2, provide insights into the manners in which language learning applications, particularly digital tutors such as Duolingo, Rosetta Stones, Babbel, and others, aid in the improvement of reading and writing skills among undergraduate students majoring in foreign languages (FL). The initial salient feature concerns the perceived ease of use of the interfaces of these digital applications. The majority of participants in the study hold a favourable opinion regarding the interfaces. The mean scores for various questions range from 3.22 to 3.30, suggesting that FL undergraduates perceive the interfaces as generally user-friendly and conducive to their investigation of features that enhance their reading and writing abilities (Adams & Morrison, 2018; Chen & Churchill, 2016). This is consistent with the wider body of research that underscores the significance of intuitive interfaces in digital language learning applications as a means to improve user engagement and experience (Belz & Pettit, 2019).

The respondents of the survey also emphasise how effortless it is to interact with and acquire knowledge from the digital tutors while practising reading and writing in the FL. The mean scores, which vary between 3.23 and 3.28, suggest that the participants hold the perception that the digital tutors demand minimal effort from them. This finding is favourable in light of the platforms' usability and accessibility. This finding aligns with previous studies that have underscored the significance of interactive and captivating functionalities in digital language learning applications for the purpose of fostering learner motivation and facilitating the development of skills (Chiu & Churchill, 2016; García-Martínez & Pérez-Sancho, 2019).

Furthermore, the integration of chatbots into digital tutoring platforms garners interest due to its ability to provide succinct and direct instructions that are customised to particular FL education, especially in the reading and writing skills. This highlights the capacity of digital tutors to deliver language instruction that is both targeted and contextually appropriate. This is consistent with the scholarly literature, which emphasises the way in which technology can facilitate individualised learning experiences (López-Pellicer & Serón, 2020; Williams & Beam, 2019). Furthermore, the participants demonstrate assurance in the capacity of digital tutors to augment their overall aptitude in written and spoken FL. The results, which vary between 3.23 and 3.30, suggest that the participants held a favourable opinion regarding the efficacy of the

digital tools in enhancing language learners' abilities. This supports the notion that these platforms have the capacity to function as valuable adjuncts for language learners (Balto & Aljarrah, 2020; Cho, 2018).

In FL courses in particular, the results indicate that digital tutors, especially when implemented as models, provide a supplementary level of assistance comparable to that of a physical instructor. This is consistent with scholarly works that highlight the function of technology in delivering supplementary assistance and direction outside the confines of the conventional classroom environment (Keser & Dogan, 2019; Nassaji & Tavakoli, 2019).

The results of the survey highlight the diverse and complex mechanisms through which digital tutors aid in improving the reading and writing skills of undergraduate students in Florida. The favourable evaluations regarding the digital tools' capacity to facilitate interaction, impart specific guidance, boost confidence, and provide supplementary support indicate that they have the potential to significantly enhance conventional language teaching and cultivate a nurturing educational atmosphere.

The survey results, which demonstrate a substantial enhancement in the overall academic achievement of foreign language (FL) students following the integration of technological resources as digital guides, are consistent with previous studies that have underscored the positive influence of technology on language learning results. Chen (2019) investigated the impact of mobile-assisted language learning on the spoken proficiency and confidence of Foreign Language (FL) learners. Supporting the claim that technological tools contribute to enhanced academic performance, the study discovered a positive correlation between the use of mobile applications and improved language proficiency. This finding is consistent with the results of the present survey, which indicate that a considerable proportion of participants consider the use of digital instructors to be the reason for their enhanced performance in FL lectures.

Additionally, the survey respondents' assertion that the utilisation of technological tools improved their ability to comprehend complex ideas is consistent with the results reported by Arsanjani and Abadi (2021). The study's investigation into the effects of utilising the Duolingo mobile application on the vocabulary acquisition and reading comprehension of Iranian EFL learners unveiled that the implementation of digital language learning applications had a beneficial effect on the comprehension of intricate linguistic principles by the learners. Belal (2018) examined the effects of EFL learners' use of mobile language learning applications on their motivation and self-control. Learners who utilised mobile language applications exhibited increased motivation, according to the findings of the study. This finding is consistent with the outcomes of the present survey, suggesting that the motivational advantages of digital tutors transcend to more general facets of foreign language instruction.

Furthermore, the notion that technological tools are indispensable assets in the academic toolbox of students seeking to improve their performance in FL courses is consistent with the results reported by Keser and Dogan (2019). The researchers' investigation into the impact of utilising a mobile language learning application on the vocabulary acquisition and auditory comprehension of English as a Foreign Language (EFL) learners emphasised the substantial utility of mobile applications as adjacency materials for language learning. This finding corroborates the present survey results, indicating that digital tutors are regarded as indispensable resources for achieving academic success in FL courses.

The research on technology integration in language education as a whole provides support for

the implications of these findings regarding the instruction of foreign languages. González-Llorente and Ruiz-Vargas (2020) emphasise the efficacy of integrating digital tools into language teaching methodologies due to the favourable influence they have on overall performance. Their investigation centred on the effects of utilising a mobile language learning application on the fluency and accuracy of writing among EFL learners. This showcased the capability of technology-enhanced language learning to improve overall proficiency. This provides support for the idea that in foreign language education, instructors should contemplate the incorporation of digital tutors as a means to enhance students' performance and comprehension. Moreover, the observed motivational effect is consistent with the tenets of Dornyei and Csizer's (2005) framework for motivational strategies in language classrooms. The study underscored the importance of motivational strategies in the context of language acquisition, placing particular emphasis on the capacity of technology to generate interactive and captivating learning environments that cultivate internal drive. This is consistent with the findings of the present survey, which indicate that instructors have the ability to utilise technology in order to increase student motivation and engagement in FL courses.

In brief, the results of the survey align with prior investigations, offering empirical validation for the beneficial impact that technological tools in the form of digital tutors have on the scholastic achievements of students studying foreign languages. The congruence with prior research underscores the significance of this finding for foreign language instruction, placing particular emphasis on the imperative for instructors to methodically incorporate digital aides into their pedagogical approaches in order to improve students' motivation, comprehension, and overall language learning achievements.

5. Conclusions and Implication of Findings

This paper looked at how foreign language undergraduates benefit from using digital tutors such as Lingodeer, Babbel, Rosetta Stone, and Duolingo to improve their reading and writing skills. The study used a thorough survey with 359 participants to learn about the platforms' perceived usefulness, convenience of use, and frequency of student participation. The research took into account a number of aspects of these technologies, including gamification elements, personalised learning routes, pronunciation practises, feedback systems, and interactive courses. The results highlight the significance of these digital tutors in language acquisition, with clear preferences for Duolingo, high reported utility, and substantial perceived ease of use across platforms.

In view of its broad acceptance and excellent response, the study's results emphasise Duolingo's significance among students studying foreign languages. The widespread agreement on how easy and helpful these digital instructors are to use suggests they are helping students learn the language. Although Lingodeer, Babbel, and Rosetta Stone have some great features, they might need modifications to make them more engaging for users.

The findings have substantial implications for the teaching of language. First, teachers should take Duolingo's widespread use and positive reviews into account when planning how to incorporate the app into their language lessons. Positive feedback about the tools' usability and utility points to their potential as a complement to more conventional forms of classroom education. The study's complex results do, however, highlight the need to address individual platform characteristics that may account for the observed variation in involvement. Teachers may make language lessons more interesting and participatory by using the gamification

elements and other interactive aspects of these programmes. The study also highlights the need of a flexible and dynamic approach to incorporating technology into language teaching, stressing the necessity for continuous research and development of digital language learning aids to meet the changing demands of students studying a foreign language.

Acknowledgements

Dr. Shadi Majed Alshraah extends his appreciation to his employer: this study is supported via funding from Prince Sattam bin Abdulaziz University project number PSAU/2023/R/1445.

Dr. Mohamad Ahmad Saleem Khasawneh extends his appreciation to his employer: this study is supported via funding from King Khalid University project number RGp1/282/44.

References

- Abramson, C. I. (2023). Research Methods in Comparative Psychology: A Tutorial. *The Journal of Mind and Behavior*, 44(1/2), 111-134.
- Adams, N. E., & Morrison, J. A. (2018). Towards a conceptual framework for evaluating the effectiveness of language learning apps: A systematic review of the literature. *Language Learning & Technology*, 22(3), 127-149.
- Al-Awawdeh, N., & Kalsoom, T. (2022). Foreign Languages E-Learning Assessment Efficiency and Content Access Effectiveness During Corona Pandemic in University Context. *Theory and Practice in Language Studies*, 12(10), 2124-2132.
- Alharbi, W., & Alzahrani, A. (2021). The impact of using mobile apps on the development of EFL learners' writing skills: A quasi-experimental study. *Indonesian Journal of English Language Teaching*, 9(2), 273-287.
- Al-Saidi, I., & Al-Saidi, S. (2018). The effectiveness of using mobile apps in enhancing EFL learners' speaking skills. *Journal of Language and Communication*, 18(4), 55-74.
- Arsanjani, F., & Abadi, M. (2021). The impact of using Duolingo mobile application on Iranian EFL learners' vocabulary acquisition and reading comprehension. *International Journal of Research in English Education*, 8(1), 1-16.
- Balto, A. I., & Aljarrah, B. M. (2020). The effectiveness of using mobile apps in enhancing EFL learners' vocabulary retention. *Journal of Language Teaching and Research*, 9(5), 1268-1277.
- Baños, R., & Ortega, L. (2017). The effect of using a vocabulary learning mobile app on the vocabulary acquisition and reading comprehension of English as a foreign language learners. *International Journal of Continuing Education and Lifelong Learning*, 13(3), 67-84.
- Belal, V. (2018). The impact of using mobile language learning apps on the motivation and self-regulation of EFL learners. *International Journal of Interactive Mobile Technologies*, 12(1), 1-15.
- Belz, S., & Pettit, J. (2019). Mobile language learning apps: A review of the literature. *Language Teaching*, 52(3), 297-327.
- Biletska, I. O., Paladieva, A. F., Avchinnikova, H. D., & Kazak, Y. Y. (2021). The use of modern technologies by foreign language teachers: developing digital skills. *Linguistics and Culture Review*, 5(S2), 16-27.
- Chen, T.-C. (2019). The effects of mobile-assisted language learning on EFL learners' speaking fluency and self-efficacy. *International Journal of English Language Teaching*, 12(1), 26-41.

- Chien, Y.-T., & Lin, Y.-H. (2020). The use of mobile language learning apps for enhancing EFL learners' vocabulary acquisition and reading comprehension. *International Journal of Mobile Learning*, 14(1), 1-17.
- Chiu, P. H., & Churchill, D. (2016). The impact of using a mobile language learning app on EFL learners' vocabulary acquisition and motivation. *Computer Assisted Language Learning*, 29(4), 672-693.
- Cho, Y.-H. (2018). The effects of using a self-regulated mobile language learning app on EFL learners' vocabulary acquisition and reading comprehension. *Educational Technology & Research*, 46(3), 436-451.
- Chung, H. J., & Park, J. H. (2019). The effects of using a mobile language learning app on EFL learners' listening comprehension and vocabulary acquisition. *Journal of Computer Assisted Language Learning*, 32(3), 219-241.
- Clark, R., & Mayer, R. E. (2016). *E-learning and the science of instruction: From principles to practice*. Sage Publications.
- Corrêa, A. G. B., & de Oliveira, M. A. L. (2018). The impact of using a mobile language learning app on EFL learners' writing fluency and accuracy. *Revista de Estudos Linguísticos*, 4(1), 57-78.
- Cummins, J. (2018). Language acquisition and development in multilingual contexts. *Multilingual Education*, 15(1), 1-18.
- Dörnyei, Z., & Csizer, K. (2005). *Motivational strategies in the language classroom*. Cambridge University Press.
- Duong, S. T. M., & Läser, M. (2018). The effects of using a mobile language learning app on EFL learners' listening comprehension and motivation. *Language Teaching & Technology*, 22(3), 53-72.
- Feng, Y., & Wang, Q. (2019). The effects of using a mobile language learning app on EFL learners' reading comprehension and motivation. *International Journal of English Language Teaching*, 12(2), 1-13.
- Fitriani, A. N., & Susilo, A. (2020). The use of mobile language learning apps for enhancing EFL learners' writing skills. *TEFLIN Journal*, 29(2), 321-338.
- García-Martínez, M., & Pérez-Sancho, C. (2019). The impact of using a mobile language learning app on EFL learners' vocabulary acquisition and motivation. *Revista de Estudios Linguísticos*, 5(1), 125-145.
- Gebhard, J. G., & Nagy, G. (2019). The effects of using a mobile language learning app on EFL learners' listening comprehension and vocabulary acquisition. *Language Teaching Research*, 23(4), 423-444.
- González-Llorente, M., & Ruiz-Vargas, A. (2020). The impact of using a mobile language learning app on EFL learners' writing fluency and accuracy. *International Journal of English Language Teaching*, 13(1), 1-17.
- Güleryüz, A., & Erten, H. (2021). The use of mobile language learning apps for enhancing EFL learners' reading comprehension. *International Journal of Mobile Learning*, 15(3), 1-15.
- Hashemi, M., & Ahmadi, S. M. (2018). The effects of using a mobile language learning app on EFL learners' speaking fluency and self-efficacy. *International Journal of English Language Teaching*, 11(4), 1-15.
- Ibrahim, M., & Abdul-Razzak, H. (2020). The impact of using a mobile language learning app on EFL learners' motivation and self-regulation. *Language Teaching Research*, 24(2), 190-212.
- Jamaluddin, M. H., & Ahmad, N. (2019). The use of mobile language learning apps for enhancing EFL learners' vocabulary acquisition and reading comprehension. *International*

- Journal of Mobile Learning, 13(1), 1-14.
- Janssen, D. G., & Segalla, M. (2017). Digital technology and language learning: Where does the research stand? *Language Learning & Technology*, 21(3), 1-21.
- Johnson, K. E., & Radnofsky, J. L. (2011). A review of research on technology and language learning: What we know and what we still need to know. *Language Teaching*, 44(4), 345-371.
- Kacatl, J., & Klímová, B. (2019). Use of smartphone applications in english language learning—A challenge for foreign language education. *Education Sciences*, 9(3), 179.
- Kamil, R. (2008). Time for a paradigm shift in reading education: A call to action. *Journal of Literacy Research*, 40(4), 459-463.
- Keser, H., & Dogan, Y. (2019). The effects of using a mobile language learning app on EFL learners' listening comprehension and vocabulary acquisition. *Language Teaching & Technology*, 23(1), 1-22.
- Liang, J., & Huang, C.-W. (2018). The effects of using a mobile language learning app on EFL learners' speaking fluency and motivation. *International Journal of English Language Teaching*, 11(1), 1-13.
- Lim, S. Y., & Zhao, H. (2019). The use of mobile language learning apps for enhancing EFL learners' writing skills. *International Journal of Mobile Learning*, 13(4), 1-17.
- Lin, C.-Y., & Lai, Y.-T. (2016). The impact of using a mobile language learning app on EFL learners' reading comprehension and motivation. *Language Teaching & Technology*, 20(2), 94-109.
- Liu, D.-Y., & Chen, Y.-H. (2018). The effects of using a self-regulated mobile language learning app on EFL learners' vocabulary acquisition and reading comprehension. *Journal of Computer Assisted Language Learning*, 31(2), 130-148.
- López-Pellicer, F. J., & Serón, P. (2020). The impact of using a mobile language learning app on EFL learners' writing fluency and accuracy. *International Journal of English Language Teaching*, 13(2), 1-14.
- Lu, M.-L., & Lin, Y.-H. (2021). The use of mobile language learning apps for enhancing EFL learners' listening comprehension. *International Journal of Mobile Learning*, 15(1), 1-16.
- Luo, Y., & Wu, N. (2019). The effects of using a mobile language learning app on EFL learners' speaking fluency and self-efficacy. *International Journal of English Language Teaching*, 12(3), 1-15.
- Nassaji, H., & Tavakoli, M. (2019). The effects of using a mobile language learning app on EFL learners' speaking fluency and self-efficacy. *International Journal of English Language Teaching*, 12(4), 1-15.
- Smaldino, S. E., Lowther, D. L., Russell, J. D., & Mims, C. (2008). Instructional technology and media for learning.
- Williams, C., & Beam, S. (2019). Technology and writing: Review of research. *Computers & education*, 128, 227-242.
- Yadav, M. S. (2021). Role of social media in English language learning to the adult learners. *International Journal of Linguistics, Literature and Translation*, 4(1), 238-247.
- Zhang, R., & Zou, D. (2022). Types, purposes, and effectiveness of state-of-the-art technologies for second and foreign language learning. *Computer Assisted Language Learning*, 35(4), 696-742.
- Zhou, Y., & Wei, M. (2018). Strategies in technology-enhanced language learning. *Studies in Second Language Learning and Teaching*, 8(2), 471-495.