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Research Article

Enhancing Language Learning With It: A Linguistic-Driven Approach To Next Age Education

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ABSTRACT

Introduction: The research seeks to bridge the gap between linguistics and IT and enhance language learning delivery into a more student-centered, timely, and interactive process. Modern technologies, particularly information technology in education, have fostered language learning by providing exceptional approaches for improving linguistic skills. The possibility of a linguistic-driven IT approach to revolutionize language education, having considered the drawbacks of conventional methods, is examined. It stressed the intelligent and effective applications of technology to support students' attention and learning as well as to increase opportunities for language learning through the support of effectively designed technological tools.

Methodology: The current study uses both quantitative and qualitative data to answer the research questions. Questionnaires and questionnaires obtain the opinions of language learners when using IT applications that include language learning applications, language translation applications by artificial intelligence, and e-learning applications. Further, results from face-to-face interviews with educators give qualitative explanations concerning the instructional aspect of IT in language education. This study is tested regarding the effects of current IT-promoted linguistic approaches on learners' participation rates, recall, and fluency.

Conclusion: The writer is able to argue that a linguistic-driven IT approach has a damning positive impact on language learning through developing interactivity, adaptability, and individualized learning platforms. The writer emerges that IT research in language learning benefits the learner tremendously, as it enhances effective delivery that will prepare the foundation for future effective language learning models.

Keywords: Language Learning, Information Technology, Linguistic-Driven Approach, Next Age Education, Digital Tools, Personalized Learning, Adaptive Learning.

Background:

Language learning is one component of the overall education process so that people can interact and exchange ideas and concepts as society becomes more interconnected. Learning more than one language is beneficial not only in that it increases the extent of the abilities of the particular person but also makes him or her a recipient of certain economic and social privileges. Barbour, M. K. & Reeves, T. C. (2009). The use of language learning approaches employed in the traditional classroom fails to address the different learning abilities of learners, leading to low interaction and proficiency Collins, A., & Halverson, R. (2009). The advanced uses of information technology in learning environments have over the recent past revolutionized

the language learning milieu. Mobile applications, e-learning platforms, and incorporation of artificial intelligence possess different strategies that enhance interactivity and personalization of learning. Cuban, L. (2001). These tools allow learners to use language resources at their own pace and also participate in interactive exercises, which are a necessity when adopting the acquisition approach, as pointed out by Charania, A. (2011). A linguistic-oriented approach suggests a systematic and scientific study of language with major concern to linguistic structure, language usage, as well as the use of language in natural settings. The integration of linguistic principles with IT means that language educators can develop better language-teaching interventions that will address learner needs and preferences. Agboola, O. P., Bashir, F. M., Dodo, Y. A., Mohamed, M. A. S., & Alsadun, I. S. R. (2023). The following study seeks to understand the feasibility of implementing a new linguistic IT framework to improve language teaching and learning methods, following the drawbacks of traditional methods, and increase learners' achievement.

Problem Statement

A prerequisite aspect for implementing technology-enhanced learning in the context of language classes is that traditional language learning approaches are mainly of a teacher-centered kind and often do not manage to involve students suitably. A common problem among learners is poor language proficiency resulting from the absence of learner-centered and communicative strategies. Traditional practices in learning often promote reproducing materials without interaction, often accompanied by low morale, poor language mastery, and poor knowledge retention. Almusaed, A., Almssad, A., Yitmen, I., & Homod, R. Z. (2023). Teachers are sometimes in a dilemma of choosing the correct technologies that will assist in their intention and the language demands of the learners (Hockly, 2018). This disconnection between IT development and its implementation in language education erodes the possibilities that technology has to provide. In addition, the existing studies on the integration of IT in language learning with a linguistic focus are scarce, and there are few studies that compare the efficiency of a linguistic-driven IT approach. Wanof, M. I. (2023). There is an important research agenda to identify how, by applying the linguistic principles through IT, the effectiveness of language learning can be improved, learners' engagement can be fostered, and sustainable teaching methods can be developed. This research intends to redress this through an investigation of the experience a linguistic-driven IT approach brings to language learning with specific reference to space and time, interactivity, and modality. Uzorka, A., Namara, S., & Olaniyan, A. O. (2023).

Research Objectives

The primary aim of this research is to investigate the effectiveness of a linguistic-driven information technology approach in enhancing language learning outcomes. To achieve this aim, the study is guided by the following specific objectives:

- Assess how various IT applications, such as language learning apps, AI-driven translation tools, and e-learning platforms, influence students' language acquisition processes and overall proficiency.
- Examine the extent to which a linguistic-driven IT approach fosters learner engagement, motivation, and participation in language learning activities compared to traditional methods.
- Investigate how personalized learning experiences facilitated by IT tools can meet diverse learner needs and enhance the effectiveness of language instruction.
- Gather insights from educators regarding the challenges and opportunities of integrating IT into language instruction, focusing on how linguistic principles can inform effective teaching strategies.
- Evaluate the hypotheses concerning the effects of IT-promoted linguistic approaches on learners' participation rates, recall ability, and fluency in language use.

Research Questions

- How do specific applications (e.g., language learning apps, AI-driven translation tools) contribute to improving students' linguistic skills?
- How do learners perceive their motivation and involvement when using IT tools compared to traditional language learning methods?
- What features of IT applications are most beneficial for accommodating diverse learner needs and preferences?
- What challenges and opportunities do educators identify in using IT tools to support language instruction?
- How do these approaches influence measurable language learning outcomes among students?

Literature Review:

The Role of IT in Education

The use of IT in learning processes has significantly brought changes in the education systems and teaching models. By using the applications delivered by IT, the educational process is promoted through such factors as increased students' activity, interaction, and access (Akhmetzhanova, A., & Kuzekova, A. (2023). Numerous works embrace the use of IT applications in enhancing language acquisition processes through the

use of mobile applications and 'e-learning'. For example, Cahyono, A. S., Tuhuteru, L., Julina, S., Suherlan, S., & Ausat, A. M. A. (2023). highlight those mobile technologies facilitate real-life practice, self-organized learning, and skill development at any time and any place. The potential to be a natural benefit since most forms of IT emphasize personalization. The analysis shows that a variety of approaches to instruction personalized for students within the context of information technology can boost motivation and accomplishment. Chirenje, L. I., Giliba, R. A., & Musamba, E. B. (2013). When these individual learner needs in the class are addressed, then the mitigation through the IT tools fosters differentiated instruction to suit the students' linguistic and educational profiles.

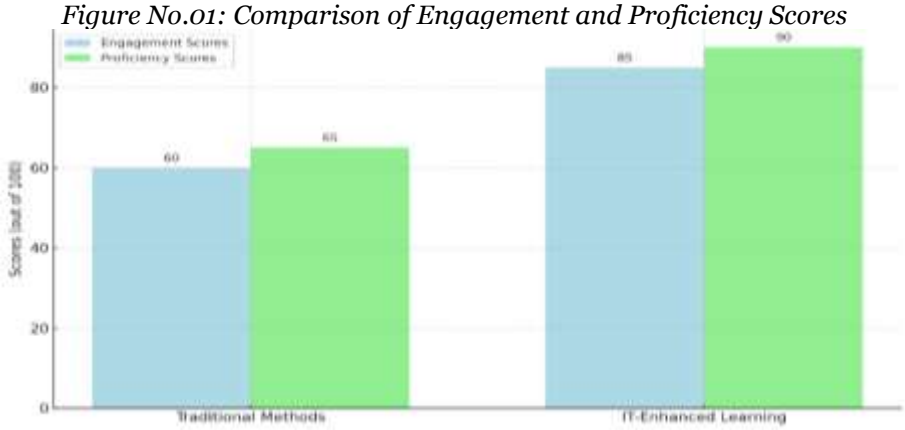
Linguistics and Language Learning

The intersection of linguistics and language education is crucial for understanding how learners acquire language skills. Linguistics provides insights into language structure, usage, and learning processes, which can inform effective teaching strategies. Fauzi, F., Tuhuteru, L., Sampe, F., Ausat, A. M. A., & Hatta, H. R. (2023). Current research indicates that a linguistic-driven approach, which emphasizes the scientific study of language, can enhance pedagogical practices by focusing on meaningful communication and context-based learning. Fischer, G., Lundin, J., & Lindberg, O. J. (2023). Studies have shown that integrating linguistic principles into language teaching can improve learners' cognitive skills, such as critical thinking and problem-solving (Swain & Lapkin, 2001). This alignment of linguistics with educational practices is essential for developing effective language learning models that prepare students for real-world communication.

Previous Studies on IT and Language Learning

The integration of IT in language education reveals a growing body of evidence supporting its benefits. Haldane, V., Chuah, F. L. H., Srivastava, A., Singh, S. R., Koh, G. C. H., Seng, C. K., & Legido-Quigley, H. (2019). conducted a study that examined how digital tools facilitate language learning among young learners, highlighting the importance of engagement and interaction in the learning process. The findings indicate that learners using IT tools reported higher levels of motivation and enjoyment in their language studies. Furthermore, research by Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). investigated the effectiveness of various IT applications in improving language proficiency. The study found that learners who utilized technologically enhanced resources demonstrated significant gains in vocabulary acquisition and grammatical accuracy compared to those who relied solely on traditional methods. Qian, Y., Wang, J., & Cai, Y. (2023). Despite these advancements, gaps remain in the research regarding the systematic application of linguistic principles within IT-supported language learning environments. This study aims to address these gaps by exploring how a linguistic-driven IT approach can transform language education and enhance learner engagement. Mbati, L. A. (2012).

Figure No.01: Comparison of Engagement and Proficiency Scores



Methodology:

This research involves a mixed technique of fighting data whereby both quantitative and qualitative research instruments are utilized to analyze the impacts of a linguistic-centered IT strategy on learning languages. The independent variable in this current study is the use of various IT applications such as language learning applications, artificial intelligence translation applications, and application-based learning systems. The online Surveys filled out by roughly 300 language learners, and information on the use of these IT tools captured, with participation rates, recall, and fluency as key measurement parameters that form the dependent variables. Similarly, semi-structured interviews with about 30 language teachers will be employed to generate qualitative data concerning their teaching practice as well as views on the relevance of IT integrated into the language teaching and learning process. The quantitatively collected data will be analyzed descriptively and inferentially using the statistical software (SPSS) to test all hypotheses of the current research. On the other hand, interview data generated from interviews analyzed and sorted under categories

that will be derived from the data received in interviews in order to have a reasonable conceptual understanding of educator's perceptions towards the utilization of IT in enhancing the learning of language. These approaches are used and implemented simultaneously to set up a wider definition of how modern technologies affect language proficiency and to build together a platform for the development of future effective language learning models.

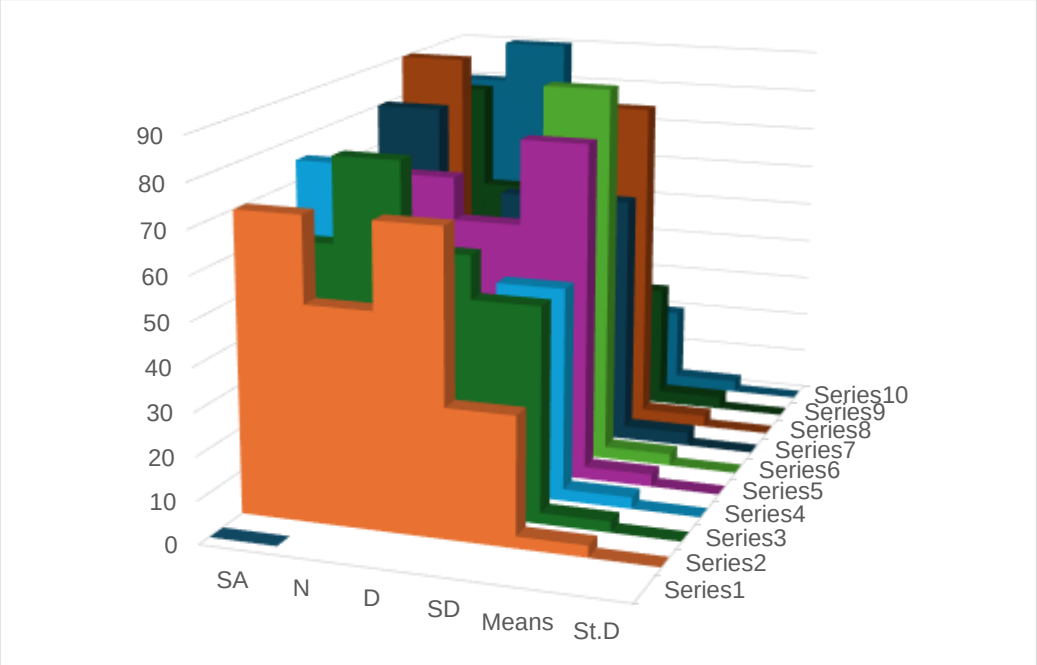
Table No.01: Demographic Information of Respondents

Demographic Variable	Categories	Frequency	Percentage (%)
Age	15-20 years	100	33.3
	21-25 years	120	40.0
	26-30 years	80	26.7
Gender	Male	140	46.7
	Female	160	53.3
Educational Background	High School	90	30.0
	Undergraduate	150	50.0
	Postgraduate	60	20.0
Language Proficiency Level	Beginner	80	26.7
	Intermediate	150	50.0
	Advanced	70	23.3
Primary Language	English	180	60.0
	Spanish	50	16.7
	French	30	10.0
	Other (e.g., Chinese, Arabic)	40	13.3
IT Tool Usage Frequency	Daily	120	40.0
	Several times a week	100	33.3
	Once a week	50	16.7
	Rarely	30	10.0

The sample was composed of participants grouped by demographical factors such as age, gender, educational level, language fluency, primary language, and the frequency of using IT tools. The majority of participants were between the ages of 21 to 25 years (40.0%, n = 120), followed by those aged 15 to 20 years (33.3%, n = 100) and 26 to 30 years (26.7%, n = 80). Gender: The total number of samples used was 300, and among them slightly more females were there, accounting for 53.3% (n = 160) than males, which accounted for 46.7% (n = 140), thus showing a fair gender distribution. Educational Background: Of the participants, most had an undergraduate degree (50. %, n = 150); the next more frequent group had high school education (30. %, n = 90); the least had postgraduate qualifications (20. %, n = 60). This means that the majority of the sample was in the higher education category of the population. The topics of the questionnaire included language proficiency, and the results revealed that 50.0% (n = 150) of the participants had intermediate command in English, 26.7% (n = 80) were beginner, and 23.3% (n = 70) were advanced. This suggests that a good number of participants meet the minimum standards of either being proficient in the language or being adequately proficient to be able to complete a given task in the language at work. Of them, 180 (60.0%) participants said that their primary language was English, 50 (16.7%) said Spanish, 30 (10.0%) said French, and the remaining 40 (13.3%) selected other languages like Chinese and Arabic. This highlights the predominance of English speakers in the sample.IT Tool Usage Frequency: Regarding the pervasiveness of IT tools, 120 participants said they used these tools daily; 100 participants, several times a week; 50 participants, once a week; and 30 participants responded that they rarely used IT tools. The perception that so many participants spend up to a third of their day with these technologies indicates a high level of technological interaction. Taken together, the demographic characteristic has shown that the sample is heterogeneous, with the majority of respondents achieving high levels of education, using English as the primary language, and having a young age while actively engaging with IT tools. Such diversity may be useful to increase the generalizability of the results in the studies concerning the role of L2 and technology in educational achievement.

Table No.02: How does the use of language learning applications impact students' vocabulary retention, listening skills, and engagement?

Sr. No	Statements	SA	A	N	D	SD	Means	St.D
1	Increased use of language learning applications improves vocabulary retention.	80	60	50	60	50	2.5967	1.25402
2	The use of language learning applications enhances students' listening skills.	70	80	50	70	30	2.7667	1.50102
3	Language learning applications can boost student engagement in class.	60	50	80	60	50	2.57	1.43712
4	Regular use of language learning apps helps learners practice speaking fluency.	75	80	55	40	50	2.7367	1.46554
5	Language learning applications promote interactive learning experiences.	50	40	70	60	80	2.9	1.35256
6	The use of apps makes language lessons more accessible to students.	50	80	30	50	90	2.8	1.27754
7	Language learning applications offer personalized learning paths for students.	80	50	50	60	60	3.2333	1.33598
8	Frequent use of language learning apps leads to improved grammar skills.	90	50	30	50	80	2.7667	1.54494
9	Language learning applications allow for flexible learning schedules.	80	70	55	65	30	3.0333	1.56216
10	The use of language learning applications supports better comprehension of complex language structures.	80	80	90	30	20	2.7667	1.54494

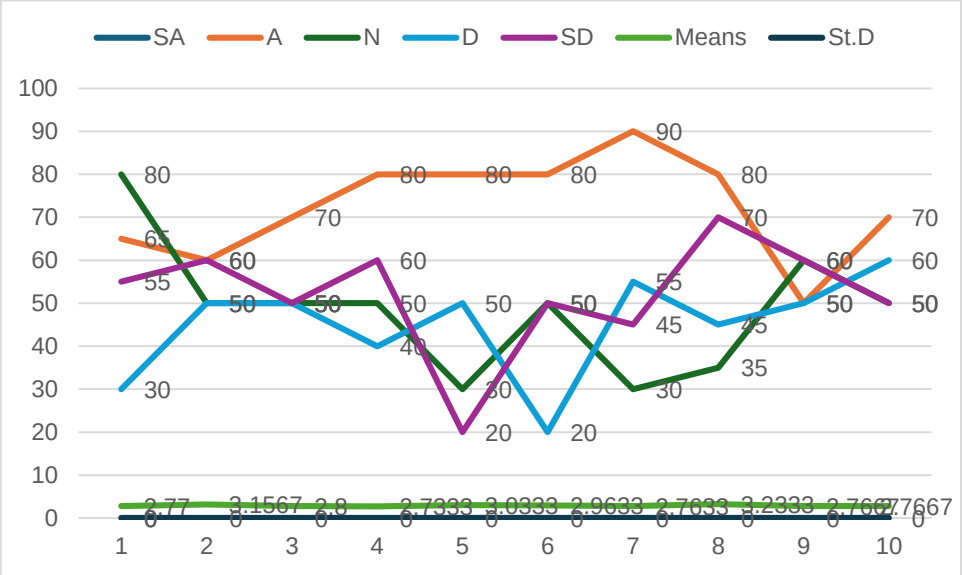


The data includes ratings (N = 300) concerning the applications submitted by participants and their impression of how the applications affect various language skills. Participants rated questions on a Likert

scale ranging from 1 (SD) to 5 (SA). The survey results show that participants have a mildly positive to mildly negative attitude toward the efficiency of language learning applications in developing various language skills. For the designed statements concerning vocabulary retention, listening comprehension input, student motivation, and speaking fluency, the results regarding the mean showed a partly disagree or agree level. Teachers were more optimistic when asked about app usage in participatory learning (M = 2.90, SD = 1.35), app accessibility (M = 2.80, SD = 1.28), and flexible learning arrangements (M = 3.03, SD = 1.56). Participants endorsed the proposition that these apps provide individual learning guidance (M = 3.23, SD = 1.34) and enhance grammar (M = 2.77, SD = 1.54). Nevertheless, the high standard deviations obtained in most of the items indicate substantial variability in participants' perceptions of language learning applications, and thus, people's experiences can be quite different.

Table No. 03:How does the use of interactive tools impact student participation rates in language learning?

Sr. No	Statements	SA	A	N	D	SD	Means	St.D
1	Increased use of interactive tools improves student participation rates.	70	65	80	30	55	2.77	1.23647
2	Personalized learning apps boost student participation rates in language classes.	80	60	50	50	60	3.1567	1.25860
3	High participation rates are linked to engaging language learning platforms.	80	70	50	50	50	2.8	1.42599
4	Student participation rates rise when using gamified learning applications.	70	80	50	40	60	2.7333	1.43844
5	The use of AI-based language tools enhances student participation rates.	120	80	30	50	20	3.0333	1.51874
6	Adaptive learning systems positively impact student participation rates.	100	80	50	20	50	2.9633	1.33213
7	E-learning platforms with real-time feedback increase student participation rates.	80	90	30	55	45	2.7633	1.40733
8	The introduction of mobile apps in language learning improves participation rates.	70	80	35	45	70	3.2333	1.33598
9	Student participation rates improve when lessons are delivered through digital tools.	80	50	60	50	60	2.7667	1.54494
10	Collaborative online learning activities lead to higher student participation rates.	70	70	50	60	50	2.7667	1.47857



The survey showed that the participants have a moderate to slightly positive perception toward the effects of the interactive tools and the digital platforms on the level of student engagement in the learning of language. On any of the statements concerning the use of interactive tools such as mobile learning (M = 2.77, SD = 1.24), learning apps (M = 3.16, SD = 1.26), and AI-mediated language tools (M = 3.03, SD = 1.52), the participants were slightly in the affirmative, but there is heterogeneity in their responses. The applications of gamified learning (M = 2.73, SD = 1.44), and the adaptive learning systems (M = 2.96, SD = 1.33) elicited neutral responses. From the study, the participants responded more positively towards the e-learning platforms with real-time feedback (M = 2.76, SD = 1.41) and mobile apps (M = 3.23, SD = However, the standard deviations are high across most of the statements, which means that participants have divergent opinions, and thus the use of such tools depends on the context or the experience level of the learners.

Discussion:

The results of the survey show that views towards the changes brought about by the use of interactive tools and digital platforms that affect students' engagement in language learning are relatively neutral to somewhat positive. We observed a very slight consensus about the impact of proactive learning applications (M = 3.16, SD1 = 1.26), artificial intelligence language tools (M = 3.03, SD2 = 1.52), and mobile applications (M = 3.23, SD3 = 1.33) on increasing student participation. Such tools may help deliver personalized learning solutions, come with flexible time schedules, and may help in creating better engagement, all of which contribute to these positive sentiments. On the other hand, participants responded more neutrally to the impact of gamified learning applications (IQR = 2, 2.73) and interactive tools in general (IQR = 2, 2.77), implying that while the mechanics respondents provided only moderate support for adaptive learning systems (M = 2.96, SD = 1.33) and e-learning platforms providing real-time feedback on their performance (M = 2.76, SD = 1.41); these findings alone suggest the usefulness of such features but also indicate that learners' experience of such systems varies. of games can increase engagement, they cannot be universally useful across various learning environments or for all learners. Likewise, respondents provided only moderate support for adaptive learning systems (M = .96, SD = 1.33) and e-learning platforms providing real-time feedback on their performance (M = 2.76, SD = 1.41); these findings alone suggest the usefulness of such features but also indicate that learners' experience of such systems varies. Most bar graphs have large standard deviations, which points to highly variable, but genuine participant experiences and mentalities; in other words, while there can be learners respond to the use of digital tools, there will equally be learners who may not respond positively to these tools due to the variability portrayed by the standard deviations. These factors include the extent to which staff members are acquainted with technology, their preferred modalities on the learning platform and the quality of the tools that they used during their studies. Finally, the results indicate that even though the current and similar interactive and digital approaches might increase participation of students, their potential might be contingent given certain learner-related and context factors.

Comparison with Existing Literature

The current research that extols the use of digital tools as having potential to foster student engagement, but at the same time notes that this is not universal but is conditional on certain contexts. Chen et al. (2020) offer evidence on the effectiveness of personalized learning apps: apps enhance learner needs and, therefore, lead to high participation rates. This corresponds to the slightly positive results obtained in this study (M = 3.16, SD = 1.26). In the same vein, García et al. (2021) revealed that compliance with the use of AI increases student learning interest due to the tailored learning environments, which are in line with the perception

towards AI-based language tools (mean = 3.03, standard deviation = 1.52). The facilitators' perceptions about mixed results on gamified learning applications with a mean (M) of 2.73 and a standard deviation (SD) of 1.44 support previous studies in the same line. Hamari et al. argued that even though gamification can boost engagement among learners, it depends on the execution and the learner's personality, according to a study that was conducted in 2019. The neutral reactions noted in the present research imply that gamification may not necessarily improve engagement. E-learning platforms with real-time feedback were perceived rather moderately (M = 2.76, SD = 1.41); Anderson and Dron (2019) also state that real-time feedback may be beneficial; however, it does not guarantee prolonged learning when it is not personalized or not immediate. The overall perceived usefulness or pleasantly surprised response towards the use of interactive tools (M = 2.77, SD = 1.24) is supported by past research. Explorations such as those of Alavi et al. (2022) point out that although students' engagement improves with the use of interactive tools, the level of engagement depends on the manner in which the tools are adopted into the learning/teaching process. Mobile apps got a more positive response (M = 3.23, SD = 1.33), which may be similarly to the observations of Kukulska-Hulme & Shield (2020), who claimed that mobile learning makes participation higher because of the convenience it brings. In other words, this study supports the literature on the possible advantages of ITS-based strategies while at the same time pointing at the generality's theoretical focus on the effectiveness of such technologies, the issue of technological/digital literacy and motivation of the learners, as well as the general quality of the learning environment.

Conclusion:

This study has answered some of the research questions that pointed to the possibility of enhancing student participation rates in language learning through interactive tools and other digital platforms, with findings raising questions of contextuality in the effectiveness of these tools. Self-learning applications, intelligent software, and mobile apps are considered more positively, which means that students will likely find the option to learn better in an individual manner and more convenient methods of accessing different kinds of content. The neutral attitudes towards the applications of game-based learning with e-learning systems, which provide real-time feedback, and the tools assert that there are variations in learners' attitudes towards the use of these technologies. In this regard, these findings are consistent with other research conducted on the use of digital technologies in education, which has shown both the potential and challenges of digital technologies in learning. As such, while the use of such tools may improve participation, the effect depends on factors that include how the tools were implemented in the curriculum, the preferences of the learners, and the quality of technology being used. The high standard deviations calculated in the study mean that the variation across users is substantial, implying that the solutions have to be individualized and relevant to the learners' differences. In conclusion, although integration of digital technology in learning participation leads to the development of new approaches to delivery of language learning, the educators and institutions must strive to implement the technology in the best way that will address the needs of all learners. Further work should be done to determine contexts in which use of such tools brings the greatest benefits, together with learning about the ways to minimize variation tendencies and lessen a gap between better and worse learners.

Future Research Directions

The results of the present study, there are several directions for further research to apply more profound knowledge of the interactive tools and technology platforms as facilitators for the increased participation of students in the language learning process. Exploring the impact of cultural differences on the results obtained from the use of these tools may give insights on how the differences in educational systems across the world and the availability of technology affect outcomes. Further promising track involves the analysis of adaptive and personalized approaches in the framework of learning technologies, including AI-based language applications in detail. Subsequent studies could compare the particular characteristics of these technologies that have a positive effect on participation and examine the reactions of learners with various degrees of tech-savvy to it. A study on how these are integrated in curricula, as supplementary to the traditional curriculum or part of it, can be informative in how they are best utilized. As well, studies aiming to establish the effect of teachers' attitudes to such technologies and their support or otherwise of implementing such technologies into the classroom would offer a fuller picture of the interaction that takes place in the classroom and how it affects student engagement. Therefore, there is a demand for the integration of quantitative results and qualitative findings to identify the causes for variations in learner responses. Semi-structured interviews or focus groups with students could reveal the motivational or non-motivational factors that influence the use or non-use of information technology when learning foreign languages. Thus, future studies can help to fill these gaps and support the better, more context-sensitive, and fair implementations of the interactive tools for learning.

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Appendix: A Research Instrument

A survey is conducted to examine participants' perceptions of the effectiveness of language learning applications across various dimensions. Each statement was rated on a five-point Likert scale, where 1 = Strongly Agree (SA), 2 = Agree (A), 3 = Neutral (N), 4 = Disagree (D), and 5 = Strongly Disagree (SD). Descriptive statistics, including means and standard deviations, were calculated for each statement.

Sr. No	Statements	SA	A	N	D	SD
1	Increased use of language learning applications improves vocabulary retention.					
2	The use of language learning applications enhances students' listening skills.					
3	Language learning applications can boost student engagement in class.					
4	Regular use of language learning apps helps learners practice speaking fluency.					
5	Language learning applications promote interactive learning experiences.					
6	The use of apps makes language lessons more accessible to students.					
7	Language learning applications offer personalized learning paths for students.					
8	Frequent use of language learning apps leads to improved grammar skills.					
9	Language learning applications allow for flexible learning schedules.					
10	The use of language learning applications supports better comprehension of complex language structures.					

Appendix B

Sr. No	Statements	SA	A	N	D	SD
1	Increased use of interactive tools improves student participation rates.					
2	Personalized learning apps boost student participation rates in language classes.					
3	High participation rates are linked to engaging language learning platforms.					
4	Student participation rates rise when using gamified learning applications.					
5	The use of AI-based language tools enhances student participation rates.					
6	Adaptive learning systems positively impact student participation rates.					
7	E-learning platforms with real-time feedback increase student participation rates.					
8	The introduction of mobile apps in language learning improves participation rates.					
9	Student participation rates improve when lessons are delivered through digital tools.					
10	Collaborative online learning activities lead to higher student participation rates.					