

Incorporating the Impacts and Limitations of AI-Driven Feedback, Evaluation, and Real-Time Conversation Tools in Foreign Language Learning

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Abstract

Artificial intelligence experts have offered foreign language lecturers with great potentials to advance their works and facilitate performance of learners. This article explores the capabilities of artificial intelligence-based feedback mechanisms, assessment techniques, and synchronous communication platforms in teaching foreign languages. The article offers an understanding of how language learning tools powered by artificial intelligence (AI) can be utilized to improve the acquisition of foreign languages, and to ascertain the limitations of artificial intelligence models in foreign language education, with an appraisal of the perspectives of language experts regarding the incorporation of AI into language learning. Moreover, the research group consisted of 100 lecturers, 150 postgraduate students King Khalid University in addition to 100 professionals who specialize in AI and were employed in the language education sector. The research design employed in this study was a cross-sectional survey. The data was obtained via an electronically disseminated questionnaires, and diverse statistical techniques were utilized to evaluate the data. In addition, the results of the study revealed that over 89% use the evaluation tools, which was far higher than 68% and 46% that use feedback and real-time communication tools. The survey results also indicated that over 68 percent of respondents accepted that incorporating a variety of AI techniques into the teaching of foreign languages makes the learning process easier and more effective. Furthermore, 60% declare that lack of contextual awareness was a limitation placed on artificial intelligence systems in the foreign languages education. About 80.5% of the survey respondents agreed that inadequate language data to train the models was another obstacle, namely the addition of distant languages, which were not included in the databases of the majority of the AI models. Finally, it is concluded that despite the potentials of AI in foreign language education, there are obvious limitations which the solution may be embedded in the conventional learning systems.

Keywords: *artificial intelligence, lecturers, questionnaires, foreign language.*

1. Introduction

Teaching of foreign languages has traditionally posed formidable constraints, attributable to a broad range of obstacles, including linguistic barriers and inadequate opportunities

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for practical application. The progress of technological devices, specifically in the realm of artificial intelligence (AI), has facilitated greater accessibility and efficiency in the teaching of foreign language skills. The implementation of AI-powered technologies, including neural networks for speech recognition and machine learning, holds the promise of transforming the landscape of foreign language teaching and learning (De la Vall and Atraya, 2023; Jeon, 2021). Lecturers in foreign language education have a chance to utilize these resources in order to facilitate the process of language instruction, resulting in enhanced academic achievement among students. As a result, it is of utmost importance to investigate the possibilities offered by AI in the field of instruction of foreign languages in order to improve language competency.

This article evaluates the usefulness of these tools in the process of acquiring a language and to ascertain the function of artificial intelligence in the domain of teaching foreign languages. The article further explores the advantages of utilizing artificial intelligence (AI) assisted assessment and feedback mechanisms in foreign language teaching. Additionally, the study seeks to evaluate the effects of real-time conversational tools on language proficiency, while also identifying the potential obstacles and constraints associated with integrating AI technology into foreign language education. The present paper's results will offer significant contributions to the understanding of artificial intelligence application in foreign language instruction and facilitate the creation of reliable language learning resources.

2. Literature Review

Different AI models have been developed, and their application and full implementation in foreign language teaching and learning have evidently improved the performance of learners and eased the workload on lecturers. There are three main areas in foreign language teaching and learning artificial intelligence innovations have revolutionized extensively, including feedback mechanisms, assessment and evaluation of learners' performance, and real-time interactive tools and platforms for enhancing learners' performance.

2.1 AI-Facilitated Feedback Tools in Foreign Language Teaching

Various artificial intelligence feedback mechanisms are accessible for teaching foreign languages, such as language learning applications, intelligent systems for tutoring, and programmed writing assessment tools. The aforementioned tools employ natural language processing (NLP) as well as machine learning algorithms to supply learners with feedback on their language proficiency. Language learning applications, such as Duolingo and Babbel, apply artificial intelligence (AI) to offer learners customized feedback on their improvements (Alharbi, 2023; Wang et al., 2023). Similarly, intelligent tutoring systems, like Carnegie Learning, employ artificial intelligence to adjust to the unique learning requirements of each student.

Automated writing evaluation (AWE) tools are frequently employed in foreign language instruction as a prominent means of artificial intelligence feedback. These software applications utilize natural language processing (NLP) techniques to examine the syntax, morphology, and lexicon of a student's written composition and supply evaluations on aspects that require enhancement.

According to the results of the research conducted by Alsadoom (2021), the use of artificial intelligence feedback materials led to considerable gains in the students' linguistic competence. The authors Think et al. (2020) carried out research that proved the usefulness of an Automated Writing Evaluation (AWE) tool like Grammarly in improving the written communication abilities of Chinese students learning English as a Foreign Language (EFL).

The use of feedback systems powered by artificial intelligence (AI) has become commonplace in classrooms where students are studying a language other than their native tongue. A variety of tools developed by AWE have been used by teachers in the process of grading and providing feedback on written projects handed in by students (Ebadi and Amini, 2022; Nicolaidou et al., 2021; Potrivcakova, 2019). This has enabled teachers to more effectively target students' specific learning needs. Educators have been using language learning apps as a supplementary resource to the more conventional education that is delivered in the classroom. This has resulted in increased language aptitude and preservation among students.

Artificial intelligence assessment tools have emerged as a crucial enabling technology in the field of second language acquisition. Learners may get tailored evaluations of their language skills thanks to the use of natural language processing (NLP) and machine learning (ML) algorithms, which are provided by the tools that were previously described. There is evidence from empirical research to suggest that AI feedback mechanisms, such as advanced systems for tutoring and educational language programs, as well as computerized writing evaluation systems, have the potential to provide beneficial results in the domain of language learning (Zhang and Aslan, 2021; Schmidt and Strasser, 2022; Jeon, 2021; Alhua, 2021; De la Vall and Araya, 2023).

These resources have been employed by lecturers as a supplementary tool to their teaching methodology, with the objective of enriching the academic achievements of their students. With the ongoing progress of AI technology, it is anticipated that further pioneering AI feedback tools will emerge to enhance the outcomes of language learning.

2.2 AI-Facilitated Real-Time Conversation Tools in Foreign Language Teaching

The introduction of Intelligent machines and tools has facilitated the integration of real-time interaction applications into foreign language instruction. The integration of artificial intelligence (AI) has facilitated instantaneous feedback, individualized language learning, and enhanced language proficiency within the context of foreign language education.

Chatbots are among the real-time interaction mechanisms that are enabled by artificial intelligence. Chatbots are software applications that utilize artificial intelligence to mimic human conversation. Language learning applications can be designed to be interactive and responsive to user input, facilitating real-time assistance for learners. Chen et al. (2021) posit that chatbots have the potential to facilitate meaningful and communicative language practice for learners, especially during the initial phases of language acquisition.

Speech recognition software is another conversational system that is facilitated by artificial intelligence and operates in real-time. The utilization of speech recognition software has the potential to enhance the pronunciation and speaking abilities of learners. Pikhart and Klimova (2020) assert that the utilization of speech recognition applications provides learners with prompt feedback, while also enabling them to improve their speaking abilities in a real-time setting. The authors contend that speech recognition applications have potential functions in both educational settings, such as classes, and for individual self-study purposes.

Real-time conversation systems that are facilitated by artificial intelligence can incorporate virtual reality (VR) innovation as well. Virtual reality (VR) technology has the potential to generate language teaching contexts that are highly immersive, thereby facilitating learners' active participation in authentic conversational exchanges. De la Vall (2023) posit that virtual reality (VR) technology has the potential to facilitate the acquisition of intercultural communication skills, promote linguistic fluency, and augment learners' motivation to acquire a foreign language.

Studies by Ebadi and Amini (2022), Alharbi (2023), and Wang et al. (2023) have demonstrated that the implementation of real-time conversation systems supported by artificial intelligence can enhance the academic performance of students in foreign

language classrooms. Jeon (2021) posit that the utilization of chatbots has the potential to furnish individualized feedback to learners, thereby enhancing their motivation and engagement. The authors contend that chatbots possess the potential to furnish learners with authentic language practice, thereby equipping them with the necessary skills to navigate real-world scenarios. The authors Alsadoom (2021) contend that the utilization of speech recognition software has the potential to enhance the speaking abilities and pronunciation of language learners. The authors contend that the utilization of speech recognition technology can enhance students' self-assurance in oral communication, leading to an amelioration of their overall proficiency in the language learning environment.

According to Chen et al. (2021), virtual reality (VR) technology has the potential to generate language learning environments that are immersive in nature, thereby facilitating learners' participation in authentic conversational exchanges. The proponents posit that the utilization of virtual reality technology can enhance the communication proficiencies of learners, augment their drive to acquire knowledge, and elevate their cultural sensitivity.

2.3 Factors that Limit the Potentials of AI Tools in Foreign Language Education

The integration of artificial intelligence (AI) tools has been on the rise in the fields of foreign language education, with the aim of improving both the effectiveness and expediency of language acquisition. Notwithstanding their potential advantages, there exist various factors that constrain their efficacy (Golonka et al., 2014; Tafazoli et al., 2017; Zhang and Aslan, 2021).

A contributing factor pertains to the inadequacy of relevant data that can be utilized to effectively train artificial intelligence models for the purpose of teaching foreign languages. The acquisition of substantial and superior data poses a potential obstacle for artificial intelligence applications, particularly in the case of less familiar languages or dialects. The outcome of this circumstance could be a restricted precision or capacity of the machine learning algorithm, thereby constraining its prospective efficacy in the domain of language education.

An additional aspect to consider pertains to the challenge of precisely evaluating linguistic proficiency through artificial intelligence (AI) mechanisms. Although AI tools have the potential to efficiently recognize patterns and make predictions, their ability to accurately evaluate the subtleties of language usage and proficiency may be limited. The potential outcome of such a scenario is the production of imprecise evaluations of language acquisition advancement, thereby restricting the efficacy of the artificial intelligence tool in the context of language pedagogy (De la Vall and Araya, 2023; Wang et al., 2023).

The likelihood for artificial intelligence programs to perpetuate language prejudices and preconceptions represents a third factor. Artificial intelligence tools are dependent on training data that mirrors current language usage. This reliance may result in the perpetuation of linguistic biases or stereotypes that are inherent in the data. The issue can be especially challenging in the context of teaching foreign languages, where it is crucial to be mindful of both cultural and linguistic nuances.

The absence of contextual awareness represents a constraint for artificial intelligence (AI) programs in the domain of foreign language education. Although artificial intelligence (AI) algorithms have the capability to be trained in pattern and structure recognition, they may encounter difficulties in comprehending the broader situation in which language is employed. The aforementioned circumstance may result in constraints on the artificial intelligence tool's capacity to furnish suitable feedback or suggestions, thereby having an adverse impact on the acquisition of language skills (Alhwa, 2021; Jeon, 2021; Nicolaidou et al., 2021; Zhang and Aslan, 2021).

The absence of customization is a constraining element of artificial intelligence (AI) tools in the context of teaching foreign languages. Although artificial intelligence (AI) programs have the capability to offer tailored learning experiences that cater to an individual's learning style and progress, they could fail to be able offer the same degree of customization as a human instructor. The efficacy of the artificial intelligence tools in catering to the distinctive requirements of every single language learner may be constrained by this.

In general, the utilization of AI tools in foreign language instruction has the capacity to augment the learning experience. However, it is imperative to acknowledge various constraining elements that may impede this process. It is imperative to consider these factors to ensure the efficacious integration of artificial intelligence (AI) techniques in the instruction of foreign languages.

2.4 Problem Statement

The integration of artificial intelligence models in foreign language education has been the primary focus of recent studies; however, it is important to interrogate the limitations of these tools, mainly the feedback evaluation and real-time communication tools. To achieve this, it is pertinent to gain insights from lecturers who use these tools to teach foreign languages, postgraduate students who are consistently using these tools to advance their foreign language education, and AI enthusiasts who are concerned about improving the tools.

2.5 Research Questions

The following questions are posed to guide the direction of the study:

- i. To what extent has automated feedback and evaluation mechanisms and real-time communication tools enhanced foreign language teaching and learning experiences?
- ii. What are the main challenges in the integration and use of AI models in foreign language education at the university level?

These questions form the bases for both data collection and analysis.

3. Study Methodology

3.1 Research Approach

Quantitative research approach is considered to be more effective for this study considering the need to engage a larger number of key stakeholders in the use of artificial intelligence in foreign language education. Cross-sectional survey design was also adopted in order to get data from a diversified.

3.2 Study Participants

Three main stakeholders in the use of artificial intelligence in foreign language education were recruited for this research. The first group are well experienced lecturers drawn across different universities. These lecturers are also conversant with the use of different artificial intelligence models in teaching foreign language, including the use of virtual reality for simulated teaching. The second group are artificial intelligence enthusiasts. These are individuals that are concentrated on advancing the use of AI in different sectors. We selectors AI enthusiasts who are also language specialists. The third stakeholders are postgraduate students I foreign language education, who are currently using AI model to advance researches in foreign language education.

3.3 Sampling

Randomised sampling strategy was selected for this study, wherein a total of 350 respondents took part in the study. They include 100 university lecturers in foreign

language course, 100 postgraduate students in foreign language education King Khalid University in addition to 150 AI professionals who are also language specialists. The table below summarizes the demographic variables.

Table 1: Demographic Variables

Groups	Category	Frequency	Percentage
Lecturers	Male	43	43%
	Female	57	57%
Post graduates	Male	49	49%
	Female	51	51%
AI Enthusiasts	Male	107	71.33%
	Female	43	28.67%

Table 1 indicates that over 56% of the study sample are male participants, which is closely followed by the female participants, at about 43.15%. The data clearly indicates that the two genders are clearly represented across the stakeholder groups.

3.4 Questionnaire Design

Data was collected through digitally distributed questionnaires, which was also designed to first derive the consent of the participants to respond in the survey. Participation was entirely voluntary as the informed consent of the participants were fully derived. The question was designed to be in three main parts. The first segment seeks to generate necessary demographic variables from the respondents. The second part is focused on the usage of AI models in foreign language education, mainly the evaluation, the feedback and the real-time conversation tools. The third section is focused on the challenges and limitations of the use of artificial intelligence models in foreign language education. Some of the questions were structured with Likert scale while some are structured to elicit certain constraint feedback.

3.5 Data Analysis Procedure

The data is presented in tables and graphs, and various statistical measures are deployed to evaluate the data. The mean, the percentages, and standard deviations of the responses are calculated. The descriptive statistics tables were generated from Jamovi software.

4. Result and Discussions

4.1 Result

A section of the questionnaire was directed at the respondents to validate the frequency of usage of the feedback, evaluation and real-time conversation tools in enhancing foreign language teaching and learning experiences. The question was directed at the lecturers and postgraduate students. The feedbacks are summarized in the graphs below.

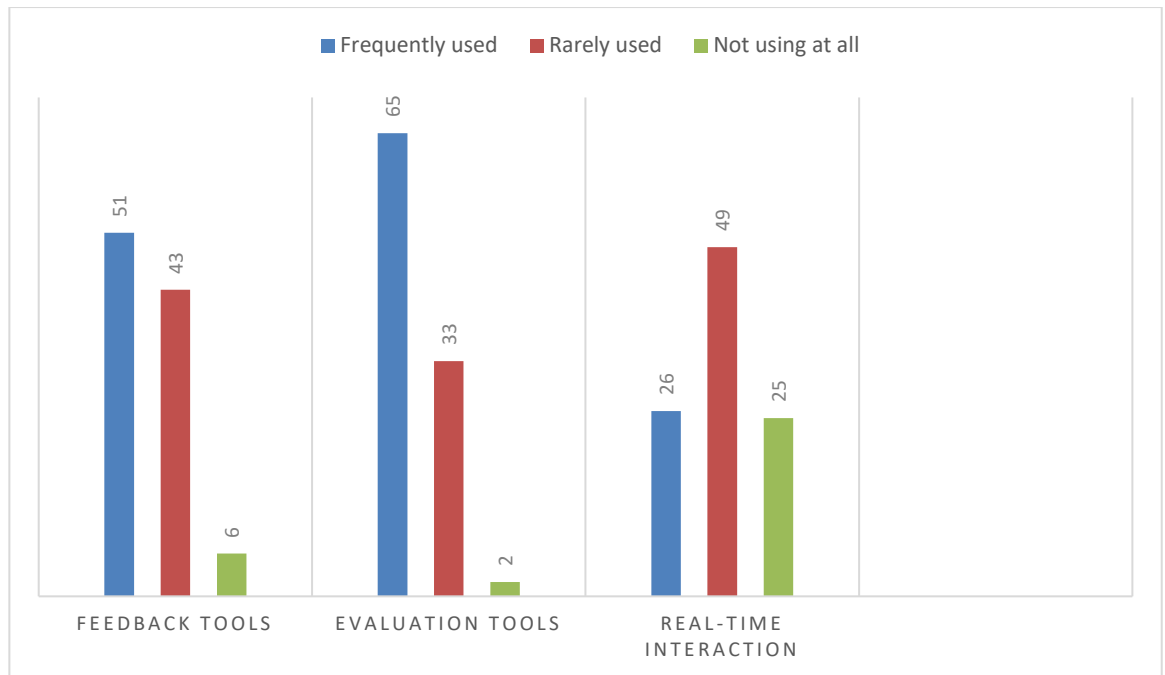


Figure 1: Summary of the frequency of usage of the AI models in foreign language teaching by the lecturers

Figure 1 indicates that the lecturers use the tools at different frequencies. Generally, they use more of the evaluation tools. In the feedback tools, 51% of the lecturers use them frequently, 43% rarely use them but usually use them at one time or the other, and 6% submitted that they have never used these feedback tools to facilitate the teaching of foreign language. For the evaluation tools, such as Grammarly and Turnitin, 65% affirmed that they use these tools frequently, 33% affirm that they use them but not regularly, and merely 2% stated that they never used these tools in foreign language teaching and learning. These tools are not used mainly for teaching, but to facilitate the learning of foreign languages, helping students to advance their proficiency. As such, it is strange to observe that there are some lecturers that don't use Grammarly, Turnitin, and other evaluation and feedback tools to enhance their teaching experience. On a different scale, only 26% of the lecturers affirm that they frequently use different real-time communication tools in teaching foreign language. About 49% affirm that they have used these tools, but not frequently. A significant value, 25% affirm that they have never used real-time conversation tools in foreign language teaching. The implication of this finding is that many lecturers need to embrace Chat Bots in teaching foreign which will help the students to easily communicate on and off lecture halls.

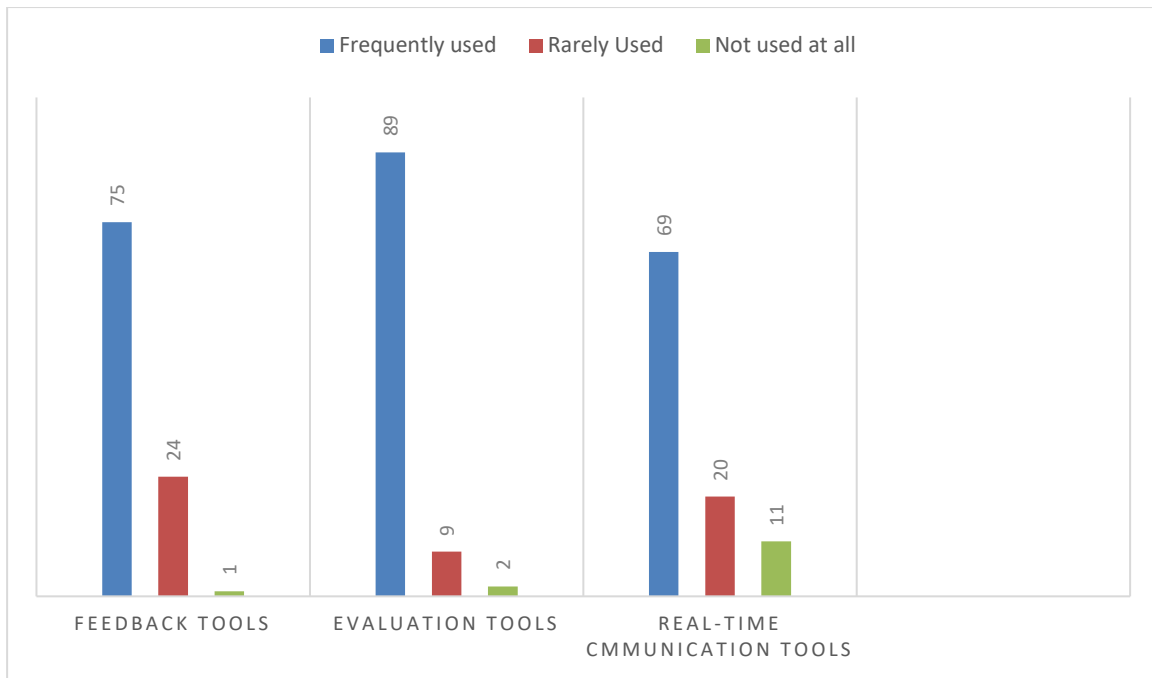


Figure 2: Summary of the frequency of usage of the AI models in foreign language teaching by the Postgraduates

Figure 2 provides insights on the usage of AI models by the postgraduate students to advance both learning the language and conducting research in foreign languages. The data indicates that 99% of the postgraduate students are using feedback tools in enhancing their foreign language learning and research, but 24% are not using them frequently. About 98% of the postgraduates use evaluation tools such as Grammarly and Turnitin to advance their foreign language learning experience. The real-time AI tools are also used by the postgraduate students, as about 69% of them use the tools frequently, 20% of them use them but not frequently, and a significant score, 11%, do not use the real-time AI models in foreign language learning.

Overall, there is an indication that a greater percentage of both the lecturers and postgraduates are using these tools to enhance the teaching and learning of foreign language. Significantly, these stakeholders seem to use evaluation tools more than other AI models in foreign language teaching and learning. Evaluation tools such as Grammarly and Turnitin are prominent in second language education and research. They facilitate the language features and enhance credibility in research.

Table 2: General Evaluation of the AI Tools in Foreign Language Learning

Question Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Means	Standard deviation
Integration of various AI tools in foreign languages education facilitates the teaching process and	25.42	43.75	9.49	13.82	7.52	3.94	1.03

learning proficiency.							
AI-Facilitated feedback mechanisms, evaluation tools and real-time conversation tools are highly beneficial in foreign language education	27.43	47.42	7.71	11.15	6.29	4.21	1.12
Using the AI tools increases the confidence level of learners, and addresses the key areas of weaknesses.	25.42	50%	5.15	11.43	8	4.35	0.98

The lecturers, postgraduate students and AI enthusiasts that participated in this study responded to these questions. Table 2 indicates that the stakeholders hold a positive view of the impact of AI models, mainly the feedback tools, evaluation tools and real-time communication tools, in enhancing foreign language learning and improving the teaching efficiency of the lecturers. The table indicates that over 68% of the study population accepted that integration of various AI tools in foreign languages education facilitates the teaching process and learning proficiency. This statement was rejected by over 20% of the sample, wherein 9.49% remained neutral. Similarly, over 74% affirmed that AI-Facilitated feedback mechanisms, evaluation tools and real-time conversation tools are highly beneficial in foreign language education. This is closely related to over 75% who accepted that using the AI tools increases the confidence level of learners, and addresses the key areas of weaknesses. These findings are similar to what Ebadi and Amini (2022), De la Vall and Araya (2023), Wang et al. (2023), among others submitted in their studies.

Table 3: Challenges and Limitations of the AI Tools

Question items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard Deviation
The absence of contextual awareness limits artificial intelligence (AI) programs in the domain of foreign language education	18.86	42.57	14.58	14.28	9.71	3.03	1.38

Lack of sophisticated and elaborate language data to train the AI models limits the efficiency.	54%	26.29	10.28	8.57	0.86	4.38	1.21
Limited trained educational experts in artificial intelligence affects the efficiency in foreign language education.	24.29	58.28	8.28	6.28	2.87	4.51	1.53

Table 3 provides insights and data that support the literature review, on the challenges and limitations of using different AI models in foreign language education. Over 60% of the participants affirm that the absence of contextual awareness limits artificial intelligence (AI) programs in the domain of foreign language education. Although over 23% rejected this statement, different studies have affirmed that lack of contextual awareness is a challenge for AI in foreign language education. About 80.5% of the respondents affirm that limited language data to train the models is another challenge, mainly the inclusion of remote languages, which are not found in the databases of most of the AI models. There are also the challenges of training and retraining of the workforce at the university level. Over 83% accepted that limited trained educational experts in artificial intelligence affects the efficiency in foreign language education.

4.2 Discussions and Implications

Artificial intelligence has proven to be vital in formal education, mainly in foreign language education at the university level. The presented data contains various findings. One key finding is that many lecturers and postgraduate students are consistently using different feedback, evaluation and real-time conversation tools facilitated by artificial intelligence. The findings of the survey reveal that over 68 percent of respondents was in agreement with the statement that incorporating a variety of artificial intelligence (AI) techniques into the teaching of foreign languages makes the learning process easier and more effective. Over twenty percent of individuals in the sample disagreed with this assertion, whereas 9.45% of them were neutral. In a similar vein, over 74% of respondents said that feedback mechanisms, assessment tools, and real-time conversation tools that are facilitated by AI are very useful in the field of foreign language instruction. This is directly connected to the over 75% of respondents who recognized that the use of artificial intelligence (AI) tools raises the confidence level of learners and tackles the major areas of shortcomings.

More than sixty percent of the participants are of the opinion that the lack of contextual awareness is a limitation placed on artificial intelligence (AI) systems in the foreign languages education. Although more than 23% of respondents disagreed with this assertion, a number of studies have shown that the absence of contextual awareness is a problem for AI in the field of teaching second languages. About 80.5% of those who participated in the survey agreed that inadequate language data to train the models is another obstacle, namely the addition of distant languages, which are not included in the databases of the majority of the AI models. At the university level, there is also the problem of training and retraining the workforce. This presents a number of obstacles. More than 83% of respondents agreed that a shortage of skilled educational specialists in

artificial intelligence had a negative impact on the effectiveness of teaching foreign languages.

Focusing on the limitation of the AI models, it is pertinent to discuss the implications of this limitations, mainly the lack of contextual awareness. No doubt, there has been tremendous development in the use of artificial intelligence (AI) in several areas, as seen in the figures and tables for data presentation. However, artificial intelligence systems have substantial limitations when it comes to teaching foreign languages since they lack contextual awareness. Learning a language in its whole context, including all of its cultural complexity, idiomatic idioms, and situational awareness, is essential.

The cultural environment in which a language is used has a significant effect in the process of acquiring that language. Due to their data-driven nature, artificial intelligence systems have difficulty grasping and properly conveying cultural subtleties and colloquial idioms. The way language is used might shift from formal to casual depending on the audience. Unfortunately, unlike humans, artificial intelligence cannot modify language lessons in response to new circumstances. It's possible that artificial intelligence programs may mislead users or cause misinterpretation if they lack the ability to comprehend their surroundings (Kannan and Munday, 2018; Chen et al., 2021).

Interpreting hidden interpretations, irony, and humorous terms are all examples of pragmatic language abilities that are essential for successful interaction. However, artificial intelligence algorithms often fail to understand these subtleties because they cannot translate figurative language. Idiomatic expressions are often used in English; "I could eat a horse" is one such phrase, signifying "I am very hungry." A computer software lacking in knowledge of context might take this sentence at its value, thus confusing language learners (Pikhart and Klimova, 2020, p.28). Language development and communication acquisition rely heavily on non-verbal clues such facial reactions, physical expressions, and gestures. However, it is difficult for AI algorithms to make use of non-verbal signals in training since they are mainly designed for text-based interactions.

5. Conclusions

This paper has presented an analysis of the potentials and limitations of artificial intelligence models in foreign language education at the university level. The focus was to unveil how feedback tools, evaluation mechanism and real-time communication systems powered by artificial intelligence advance foreign language teaching and learning. Data was gotten from 100 lecturers, 100 postgraduate students and 150 AI enthusiasts who are also language specialists. Data was analysed using relevant statistical tools. The result indicates most lecturers and postgraduates use evaluations tools such as Grammarly and Turnitin modern other feedback mechanisms and real-time communication systems for advancing foreign language learning and research. This is supported by over 89% that use the evaluation tools, which is far higher than 68% and 46% that use feedback and rea-time communication tools. The findings of the survey reveal that over 68 percent of respondents was in agreement with the statement that incorporating a variety of artificial intelligence (AI) techniques into the teaching of foreign languages makes the learning process easier and more effective. Also, 60% declare that lack of contextual awareness is a limitation placed on artificial intelligence (AI) systems in the foreign languages education. About 80.5% of those who participated in the survey agreed that inadequate language data to train the models is another obstacle, namely the addition of distant languages, which are not included in the databases of the majority of the AI models. It is thus concluded that despite the potentials of AI in foreign language education, there are obvious limitations which the solution may be embedded in the conventional learning systems.

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