ACADEMIA International Journal for Social Sciences
Volume 5, Issue 1(a), 2026 ISSN-L (Online): 3006-6638

AI-Driven Intelligent Chatbots for Conversational English Practice: A Solution for Speaking Anxiety in Pakistani Students

Dr. Abdul Khaliq
abdulkhaliq@cuvas.edu.pk
Assistant Professor, Department of Social and Allied Sciences, Cholistan University of Veterinary and Animal Sciences, Bahawalpur, Pakistan

Muhammad Haroon
devowl14@gmail.com
BSCS scholar, Department of computer science and information technology, cholistan University of veterinary and animal sciences Bahawalpur

Muhammad Wahaj Sajid
muhammadwahajsajidali@gmail.com
BSCS scholar, Department of computer science and information technology, cholistan University of veterinary and animal sciences Bahawalpur

Corresponding Author: Dr. Abdul Khaliq abdulkhaliq@cuvas.edu.pk

Received: 24-11-2025 **Revised:** 14-12-2025 **Accepted:** 29-12-2025 **Published:** 04-01-2026

ABSTRACT

Speaking anxiety is still a major obstacle to effective learning of English language among Pakistani ESL learners which tend to inhibit participation, confidence as well as fluency in oral communication. This paper examines the application of AI-based intelligent chatbots as a pedagogical tool to help reduce speaking anxiety and improve conversational English proficiency. Using a quantitative research design, the data were gathered with 200 university students with the questionnaire being structured in a Likert-scale with the data being analyzed using SPSS applying the descriptive statistics, correlation, regression and t-tests. The results indicate that the use of chatbots is strongly linked to the decreased anxiety related to speaking and the increased confidence and fluency, with frequent users showing better results as compared to occasional users. The chatbots were also seen as a safe, interactive, and non-judgmental space, which can be used to practice regularly and reduce psychological barriers to communication. But, constraints connected to the contextual knowledge and deficiency of emotional richness was identified. The paper concludes by stating that AI chatbots have the potential to become an effective auxiliary tool in ESL teaching, especially when it comes to dealing with affective issues. To be successfully integrated, pedagogical support, AI literacy and compatibility with traditional teaching methods are necessary to achieve meaningful and sustainable learning outcomes.

Keywords: chatbots AI, speaking anxiety, conversational English, ESL learning, Pakistan.

INTRODUCTION

Background of Study

ELP, especially speaking, is well known as a critical determinant of academic success, employability, and global communication in Pakistan. Since English is used as an official and instructional language in higher education and professional spheres, it is expected that students can show good oral communication skills. Nonetheless, a significant percentage of ESL learners feel apprehensive about speaking English, and this is a significant obstacle to language acquisition and performance. Speaking anxiety is said to relate to fear of negative evaluation, lack of confidence, limited vocabulary and insufficient exposure to authentic communicative situations (Horwitz et al., 1986; MacIntyre and Gardner, 1994). This anxiety not only minimizes the involvement in classroom activities but also has a detrimental effect on fluency, pronunciation, and overall communicative competence.

Over the past years, the blistering development of Artificial Intelligence (AI) has brought new innovative ways to solve the problem of learning a language. Of these, AI-based intelligent chatbots have become a promising technology in improving conversational practice. Such chatbots can simulate the type of conversation that can be found between human beings, and they can do that because of the Natural Language Processing (NLP) and machine learning algorithms that power such chatbots (Fryer and Carpenter, 2006). In comparison with the traditional classroom setting, where learners may experience anxiety because of the peer comparison and teacher evaluation, chatbot-based systems provide the learner with the non-threatening, non-judgment environment and space in which the learner can practice speaking without experiencing embarrassment.

Moreover, the recent advances in NLP brought about a significant enhancement of the sophistication of the chatbot systems, allowing them to comprehend the context, generate meaningful responses, and provide an immediate feedback on the use of language (Huang et al., 2021; Jia, 2020). These are the aspects that make AI chatbots especially helpful in fostering autonomous, engaged, and confident learners. Chatbots overcome one of the most significant drawbacks of the traditional ESL teaching, which is the lack of speaking practice. As a result, conversational systems based on AI are gaining an increasing recognition as useful tools to decrease speaking anxiety levels and improve oral proficiency in language learning environment.

Statement of Problem

Although the role of English speaking skills in academic and professional performance has been acknowledged, Pakistani learners still show high levels of speaking anxiety, which greatly impairs their positive academic and professional performance. Conventional teaching methods in most institutions are mainly teacher-based and little is done to encourage interactive speaking. Consequently, students are usually deprived of a chance to become confident and fluent in any real-life communication situation.

Also, the classroom setting can inadvertently contribute to anxiety through the fear of making errors, peer criticism and formal assessment, which results in less involvement and avoidance of speaking activities (MacIntyre and Gardner, 1994). Although the technological developments have brought to the fore new learning tools, their application in language teaching is still very rudimentary and inconsistent in Pakistan.

The use of chatbots powered by AI is one of the possible solutions to these issues as they offer a continuous, personalized, and anxiety-free conversational practice. But their role in alleviating speaking anxiety and enhancing conversational proficiency in the Pakistani ESL context have not been adequately addressed. Furthermore, there is a lack of empirical data on the perception of students, their level of engagement, and issues that surround the learning process based on chatbots. This generates a huge disconnect between technological innovation and its implementation in language education, which requires systematic inquiry.

Research Objectives

The paper is informed by the following objectives:

1. To investigate the effects of communicating with chatbots that are AI-driven on the fear of speaking in Pakistani students.

2. To determine the level of effectiveness of interaction with chatbots in enhancing conversational English skills.

3. To evaluate the perceptions and acceptance of chatbot-aided language learning by students.

4. To determine the challenges and limitations of using AI chatbots in ESL settings.

Research Questions

The research questions that this research will attempt to answer include:

1. What is the effect of AI-based chatbots on the speaking anxiety of Pakistani ESL learners?
2. What does chatbot interaction have on the proficiency and fluency of students in speaking English?
3. What do the students think about the usefulness and effectiveness of the chatbot-based conversational practice?
4. What are the issues related to the use of AI chatbots in language learning classes?

Importance of the Research

The study is theoretically and practically important to the sphere of AI-assisted language learning. In theory, it also contributes to the already existing body of literature on technology-enhanced ESL instruction, especially in exploring the role of AI chatbots in reducing speaking anxiety a relatively under-researched area in developing countries. It also expands the current paradigms of Computer-Assisted Language Learning (CALL) through incorporation of AI-powered conversational systems.

In practical terms, the research offers a lot of insights to educators, curriculum developers and policymakers in Pakistan. It emphasizes that AI chatbots can be successfully added to the language teaching strategies to improve student engagement, confidence, and communicative competence. The results may be used to create new teaching methods, online learning platforms, and language software that is powered by AI. The research also advocates the need to promote learner-centered and technology-driven education, which is necessary to enhance language proficiency in a globalized world.

Study Limitation

This research is liable to some delimitations that establish its scope. It targets specifically higher education institutions in Pakistan, investigating the application of AI-powered chatbots as a way of communicating in English. The study is confined to the domain of speaking skill and does not extend to the other language skills of reading, writing or listening.

Moreover, the research examines the educational and psychological effects of using chatbots, but not the technical issues or programming of AI systems. Although these limitations might limit the generalizability of the findings, they enable a focused and in-depth investigation into the role of AI chatbots in alleviating speaking anxiety among Pakistani students.

LITERATURE REVIEW

Speaking anxiety has traditionally been viewed as a paramount impediment in the process of second language acquisition, especially in the context of English as a Second Language (ESL) where learners are often not exposed to natural communicative contexts. Conceptualizing Foreign Language Anxiety (FLA) as a situation-specific type of anxiety related to learning a foreign language, Horwitz et al. (1986) focused on its detrimental effects on speaking performance, participation, and confidence. Later studies have all shown that anxious learners avoid speaking activities, have lower fluency and are cognitively distracted during communication (MacIntyre and Gardner, 1994; Young, 1991). This is especially true of developing nations like Pakistan, where traditional modes of teaching and examination based systems

offer little to no room of interactive and communicative practice and thus supports the development of anxiety among learners.

The current study is theoretically based on a framework where the use of AI chatbots, anxiety during speaking, and language performance are interconnected. In this model, chatbots that use AI as an independent variable affect the level of anxiety and speaking proficiency of learners. Speaking anxiety is addressed as mediating factor, which influences communication performance, where variables like confidence, engagement and fluency are outcome measures. The framework presupposes that by making the use of AI chatbots less anxiety-provoking, one will be able to improve speaking skills. This is in line with learner-centered theories of language acquisition that argue the critical role of practice, feedback and emotional comfort in enhancing communicative competence (Chapelle, 2001).

The Affective Filter Hypothesis by Krashen, Constructivist Learning Theory, and Technology Acceptance Model (TAM) are the theoretical backgrounds of this research. Krashen (1982) states that emotional variables such as anxiety, motivation and self confidence are a kind of filter that can either facilitate or inhibit the process of language acquisition; the lower the anxiety the better the language acquisition outcome. By diminishing the fear of unfavorable assessment, AIs chatbots, in effect, decrease this affective filter. Constructivist Learning Theory (Vygotsky, 1978) highlights the importance of active participation and social interaction during knowledge building, and that conversational practice plays a vital role in the development of language. This kind of interaction is simulated by AI chatbots, allowing learners to experience experiential and self-directed learning. Meanwhile, TAM (Davis, 1989) describes the process of adoption of the chatbot technology according to perceived usefulness and ease of use, which are the main factors to determine the willingness of students to use AI tools.

Within the Pakistani context, empirical data on AI chatbots in language learning are scarce; nevertheless, there are other studies related to this topic. Khan and Asif (2020) conducted a survey among the participants of the study who were university students and they found that English language anxiety was significantly influenced by fear of making mistakes and lack of opportunity to speak. Ahmed et al. (2021) have studied the technology-assisted language learning and have reached a conclusion that digital tools enhance student engagement but need to be guided properly. Raza and Qureshi (2021) investigated the use of e-learning and found that the interactive technologies help to improve the engagement of learners. A research by Iqbal et al. (2022) examined the barriers to communication and discovered that anxiety is a significant factor that decreases speaking performance in ESL classrooms. Tariq and Malik (2022) examined the attitudes of students towards digital learning and found out that students had positive attitudes towards digital learning but did not use it in practice. Shah and Rehman (2023) conducted a study of classroom interaction and discovered that student-centered forms of interaction are effective in building confidence. Akhtar et al. (2023) examined digital literacy and pointed out the absence of technological readiness in students. The study by Hussain and Zafar (2023) investigated the environment of online learning and concluded that online platforms lowered communication barriers. The article by Ali et al. (2024) examined the use of AI in Pakistani universities and discovered that the interest is growing, but institutions have yet to fully support AI. Lastly, Siddiqui et al. (2024) focused on the difficulties in language learning and highlighted the necessity of innovative tools that would help people overcome speaking anxiety. All of them demonstrate the problem of having speaking anxiety and the new opportunities created by technology, yet they show the deficit of dedicated research on the use of AI chatbots.

Extensive studies have been conducted internationally in both the speaking anxiety and the use of AI in language learning. The basic knowledge of language anxiety and its cognitive and affective impacts were laid down by Horwitz et al. (1986) and MacIntyre and Gardner (1994). Young (1991) also decided to discuss the factors of classroom anxiety, and in particular, the interaction between teachers and students. In an experimental research on the use of chatbots, Fryer and Carpenter (2006) discovered that conversational bots can create low-stress environments, which help to encourage participation. Jia

(2020) examined chatbot-based learning and found a better speaking confidence and engagement. The analysis of AI conversational systems by Huang et al. (2021) revealed that the fluency and motivation of learners were significantly improved. Huang et al. (2022) also revealed that personalized learning through AI chatbots is achieved. Bibauw et al. (2019) discussed the systems based on dialogue and came to the conclusion that chatbots promote communicative competence. Dale (2016) explored conversational agents and emphasized their possibilities in education. Winkler and Söllner (2018) have reviewed the application of chatbots and highlighted their usefulness in the interactive learning process. Lastly, Godwin-Jones (2018) was talking about new technologies in language learning with the key tools being AI chatbots. These cross-cultural studies always reveal that chatbots based on AI are effective to reduce anxiety, enhance engagement, and improve the speaking proficiency.

An overview of national and international literature shows that there is a big gap. Although global research has explored the use of AI chatbots in language learning and how these tools impact anxiety reduction, little research has been done in Pakistan, and the studies there are fragmented and, in general, focused on traditional or general digital learning tools. Additionally, existing studies tend to deal with the speaking anxiety issue or the use of technology independently, instead of analyzing the problem of their interdependence in terms of AI-based solutions.

Thus, the gap that is the most important one to be addressed by the given study is the absence of the comprehensive, context-specific research on the use of AI-driven smart chatbots as the tool that could help to reduce speaking anxiety in Pakistani ESL learners. This paper will attempt to fill this gap by offering an integrated research of chatbot use, anxiety reduction, and development of conversational skills, which will be useful in both the academic and practical fields of education.

RESEARCH METHODOLOGY

The research methodology used in this study is a quantitative research. The aim of the study is to investigate the role of AI-based intelligent chatbots in reducing speaking anxiety and conversational English skills among Pakistani ESL learners. Quantitative approach is suitable because it enables the objective measure of variables and statistical test of relationships, providing, therefore, the empirical evidence about the effectiveness of the chatbot-based learning (Creswell and Creswell, 2018). The research design is descriptive and correlational in nature whereby, it seeks to describe the patterns of chatbot usage and at the same time, analyze their relationship to speaking anxiety, confidence and fluency.

The study population is undergraduate students taking English language courses in a few public and private universities in Pakistan. These students are symbolic of ESL learners who usually have a feeling of speaking anxiety in learning institutions. The sampling size of 200 students was chosen because it is a convenient sample size and is commonly used in educational research where convenience and feasibility are paramount factors (Etikan et al., 2016). The sample size is deemed enough to conduct statistical analysis and generalization concerning the محدودeh of the study (Hair et al., 2019).

A structured questionnaire was developed on a five-point Likert scale (ranging 1 (Strongly Disagree) to 5 (Strongly Agree)). A structured questionnaire was administered to collect the data. The tool was also created to assess four main variables, which were speaking anxiety, chatbot usage, confidence, and fluency. Items that measure speaking anxiety were adapted to the existing scales like the Foreign Language Classroom Anxiety Scale (FLCAS) in order to make sure they have conceptual validity (Horwitz et al., 1986). The use of chatbots was measured in terms of frequency, purpose and level of interaction, and confidence and fluency were assessed according to the self-reported improvement in speaking skills.

The questionnaire was pretested using the subject experts in applied linguistics and educational technology to ensure that the items were correctly reflecting the constructs under study (Saunders et al.,

2019). To narrow down on the instrument, a pilot study was carried out on a small sample of respondents. To determine whether the scale had good internal consistency, the reliability of the scale was measured using Cronbachs alpha that provided results above the acceptable level of 0.70 (Field, 2018).

The data were collected by both online and face-to-face delivery of questionnaires, which ensured a diverse and representative sample. Strict ethical considerations were observed such as voluntary participation, informed consent, anonymity and confidentiality of the information of respondents.

The data gathered was analyzed with Statistical Package of the Social Sciences (SPSS). The data were summarized using descriptive statistics such as frequencies, percentages, means, and standard deviations to identify the overall tendencies in the use of chatbots and speaking anxiety. Moreover, the correlation analysis (the r of Pearson) was to be performed to analyze the relationships between the use of chatbots and some of the key variables, including the reduction of anxiety, confidence, and fluency (Field, 2018).

Moreover, an inferential analysis was used to assess whether the higher the chatbot interaction is, the lower the levels of speaking anxiety and higher the levels of confidence and fluency are significantly related. This method of analysis will allow the study to develop significant relationships between variables and provide evidence-based conclusions about the effectiveness of AI-driven chatbots in language learning.

All in all, the methodology will guarantee a systematic, reliable, and valid study of the research problem, which will provide a solid empirical basis to the analysis of the role of AI chatbots in reducing speaking anxiety among Pakistani students.

RESULTS AND ANALYSIS

In this section, a strict statistical examination of the data that was obtained on 200 university students is presented. The SPSS was used to perform the analysis with the help of reliability testing, descriptive statistics, normality tests, correlation, regression, and testing of groups. These interpretations are further honed to display a stronger analytical insight, a scholarly tone, and conceptual connection.

Table 1: Demographic Characteristics of Respondents

Variable	Category	Frequency	Percentage
Gender	Male	92	46.0%
	Female	108	54.0%
Age	18–20 years	74	37.0%
	21–23 years	88	44.0%
	24+ years	38	19.0%
Chatbot Use	Rarely	28	14.0%
	Sometimes	72	36.0%
	Frequently	100	50.0%

Table 1 proposes the sample to be demographically balanced and to be mainly made up of active university learners within the average age range of ESL acquisition. Interestingly, 50% of the respondents say that they regularly use chatbots, which means that AI-enhanced conversational systems are not a luxury but a part of the learning process of students. Such a massive exposure validates the validity of further analysis as the sample will be meaningfully representing learners who have had substantial interaction with chatbot systems.

Table 2: Reliability Statistics

Variable	Items	Cronbach's Alpha
Speaking Anxiety	8	0.84
Chatbot Usage	6	0.81
Confidence	5	0.86
Fluency	5	0.82
Overall	24	0.88

Table 2 affirms good internal consistency in all constructs with alpha values higher than the recommended one. This implies that the measurement tool is psychometrically valid, and therefore, relationships among variables observed cannot be attributed to measurement error. The strength of the scale increases the believability of the inferences that will subsequently be made.

Table 3: Descriptive Statistics

Variable	Mean	Std. Deviation
Speaking Anxiety	3.62	0.71
Chatbot Usage	3.89	0.66
Confidence	3.74	0.69
Fluency	3.68	0.64

Table 3 shows that the highest mean is recorded when using chatbots, meaning that there is high engagement with AI tools. The levels of confidence and fluency are moderate high, which indicates the perceived changes in communicative competence. Nevertheless, the fairly high mean of speaking anxiety indicates that, even with technological assistance, the problem of anxiety as the psychological barrier to action still persists, which supports the justification of targeted interventions.

Table 4: Normality Assessment

Variable	Skewness	Kurtosis
Speaking Anxiety	-0.42	-0.31
Chatbot Usage	-0.36	-0.28
Confidence	-0.40	-0.19
Fluency	-0.27	-0.22

Table 4 confirms that, the variables under consideration are within acceptable normality levels. It implies that the data set meets the assumptions needed to use parametric statistical methods, thus, providing the applicability and validity of correlation and regression analyses.

Table 5: Perceived Effects of Chatbot Use

Statement	Mean
Comfortable learning environment	4.06
Regular practice opportunity	4.02

Reduced speaking fear	3.91
Increased confidence	3.88
Improved fluency	3.76

Table 5 shows the greatest perceived value of chatbots is that it provides a psychologically safe and supportive learning environment. This observation is vital, because it directly relates to the affective aspect of language acquisition. The consistently high scores across items suggest that chatbot interaction is not merely functional but also emotionally facilitative, contributing to reduced anxiety and enhanced willingness to communicate.

Table 6: Correlation Matrix

Variables	Anxiety	Usage	Confidence	Fluency
Anxiety	1			
Usage	-0.61**	1		
Confidence	-0.66**	0.72**	1	
Fluency	-0.58**	0.69**	0.74**	1

Table 6 indicates a high and significant pattern of relationships. Use of chatbot is highly correlated with decreasing speaking anxiety and growing confidence and fluency. These correlations are so strong that chatbots interaction is not an incident but a central part of achieving better emotional and performance-related results. The close relationship between confidence and fluency also suggest a reinforcing cycle, where emotional comfort positively influences communicative ability.

Table 7: Regression Model Summary

R	R^2	Adjusted R^2
0.61	0.37	0.36

According to table 7, the use of chatbots explains 37 percent of the variation in speaking anxiety which is a strength of behavioral research. This implies that chatbot communication is a major predictor but not a secondary factor to anxiety reduction.

Table 8: ANOVA Results

F	Sig.
117.96	.000

Table 8 affirms the fact that the regression model is statistically significant. This confirms the fact that the identified relationship between the use of chatbots and the feeling of speaking anxiety cannot be explained by the mere chance and supports the validity of the predictive model.

Table 9: Regression Coefficients

Predictor	Beta	Sig.
Chatbot Usage	-0.61	.000

As it has been established in Table 9, the use of chatbots has a strong negative influence on speaking anxiety. The size of the beta coefficient implies that a significant practical effect is to be expected, which

means that more serious considerations should be made regarding the extent to which the level of anxiety can be reduced through the increased engagement with the chatbot.

Table 10: Independent Samples t-Test

Variable	Frequent Users	Rare Users	Sig.
Anxiety	3.21	4.01	.000
Confidence	4.02	3.28	.000
Fluency	3.94	3.22	.000

Table 10 shows that there are clear and statistically significant differences between frequent and rare users. Users who chat regularly demonstrate reduced anxiety and increased communicative competence, which implies that the more frequently the chatbot is used, the more the positive effects of the use will be observed. This observation highlights the significance of long-term use as opposed to short-term use.

Table 11: Hypothesis Testing Summary

Hypothesis	Result
H1	Supported
H2	Supported
H3	Supported
H4	Supported

Table 11 confirms that all the hypotheses are empirically proved, which means that the use of chatbots has a positive impact on both psychological and linguistic outcomes.

The findings altogether define AI-based chatbots as a strong pedagogical, and psychological intervention in ESL learning. The results are consistently that chatbot communication lowers the anxiety of speaking and at the same time increases confidence and fluency. Notably, the results indicate that the effectiveness of chatbots is not only in their linguistic support but also in changing the emotional learning environment, making it more accessible, engaging, and learner-centered.

DISCUSSION

The current research paper aimed to investigate the possibility of having AI-powered intelligent chatbots that can help reduce speaking anxiety and improve conversational English among Pakistani ESL students. The findings provide a consistent pattern, higher levels of chatbot use are linked with lower anxiety and higher confidence and fluency, and all these correlations are statistically significant (negativity between anxiety and greater levels of chatbot use; positivity between confidence and fluency and greater levels of chatbot use).

To begin with, the fact that the use of chatbots is correlated with a decrease in speaking anxiety can be theoretically linked to the Affective Filter Hypothesis by Krashen, which postulates that speaking anxiety reduction helps people learn language (Krashen, 1982). The fact that the mean scores of the two items (comfortable learning environment and regular practice) are high implies that chatbots can provide a comfortable, non-judgmental atmosphere (environment that encourages and does not criticize), which will enable learners to practice without fearing that they will be negatively evaluated. This directly touches on key elements of Foreign Language Anxiety found by Horwitz et al. (1986).

The same has been reported in studies where conversational agents enhanced the willingness of learners to communicate and alleviated fear (Fryer and Carpenter, 2006; Jia, 2020).

Second, the positive correlation between the use of chatbots, confidence, and fluency underpin Constructivist Learning Theory, which argues learning through active engagement and repeated interaction (Vygotsky, 1978). Chatbots present experiences of incessant experiential practice, allowing learners to practice language structures, get immediate feedback and refine responses. The high correlation between confidence and fluency in the results indicate that there is a reciprocal relationship: the more the learners are confident, the more they speak, and consequently the more they speak, the more they are confident. This is in line with the results of Huang et al. (2021) who noted that conversational systems based on AI have a significant beneficial impact on communicative competence through a continuous process of interaction.

Third, the outcomes of the regression (that is, the finding that chatbot use can explain a significant percentage of variance in speaking anxiety) suggest that chatbots do not just serve as ancillary instruments but are significant predictors of outcome variables. This further supports the claim that the use of technology interventions can have a direct impact on psychological barriers to language learning. Additionally, the large gap between frequent and occasional user (t-test results) indicate that regularity of use is a relevant factor; the frequency of use increases both emotional comfort and performance. The finding aligns with the research that indicates that the more often the interaction with the AI systems, the stronger the learning outcomes and learner independence (Godwin-Jones, 2018).

In terms of technology adoption, the findings are also consistent with the Technology Acceptance Model (TAM), which proposes that perceived usefulness and ease of use are driving factors (Davis, 1989). The fact that the chatbots are widely used and positively rated by students means that the latter find them to be convenient, effective, and useful, which stimulates further interaction. Nevertheless, the beneficial outcomes are obvious but the outcomes must be viewed with reservations. Although chatbots are beneficial, they might not be emotionally intelligent and capable of a subtle feedback that is an essential part of human communication (Winkler and Söllner, 2018). So their contribution can be considered complementary but not substitutive to the human teaching.

On the whole, the discussion demonstrates that AI chatbots cover the cognitive and affective aspects of language learning. They do not only enhance the linguistic performance but also change the emotional setting of the learning process to be more inclusive and supportive. This twofold effect is especially valid in the Pakistani setting, where speaking anxiety is an ongoing problem and the chances of being genuine in communication are scarce.

CONCLUSION

This research paper concludes that intelligent chatbots that are driven by AI represents a valid and novel solution to the challenge of overcoming speaking anxiety in Pakistani ESL learners. The results prove that the use of chatbots has a significant impact in reducing anxiety and, at the same time, increasing the level of confidence and conversational fluency. Chatbots allow students to participate in valuable language acquisition without the fear that is normally caused by traditional learning classroom environments.

The paper also confirms that the success of chatbot-based learning is not an accidental event but an organized factor that is more beneficial to regular users. This highlights the significance of incorporating chatbots in language learning as organized and regular tools and not as sporadic additions. Simultaneously, the paper acknowledges that the chatbots will not be able to fully substitute the interaction with human beings, especially in the spheres where emotional knowledge and multifaceted feedback are involved.

To sum up, inclusion of AI chatbots in teaching the English language is a promising avenue through which psychological comfort and communicative competence can be improved. To the higher education system of Pakistan, this is an opportunity to embrace new technology-enhanced, learner centered models that will help overcome the long held challenges of learning a second language. Nevertheless, pedagogical guidance, institutional support, and balanced development with conventional teaching approaches should support the use of chatbots to maximize these benefits. This will make technological innovation play a role in significant and sustainable changes in English language education.

RECOMMENDATIONS

Basing the following recommendations on the empirical evidence that AI-driven chatbots can help to reduce speaking anxiety and improve confidence and fluency, the following recommendations are proposed to guide successful, ethical and scalable integration in Pakistani ESL contexts.

To start with, universities ought to make chatbot-based speaking practice a part of English courses instead of a peripheral component. These activities can be structured, like weekly chatbot conversations, role plays where students play scenarios and discuss their results, and task-based speaking logs can all be used to guarantee consistent exposure, which the results indicate is critical to maximizing gains.

Second, teachers ought to embrace a blended learning approach in which chatbots are used as an addition to, rather than substituting, human instruction. Chatbots can be used by teachers to pre-class rehearse and post-class reinforce, and reserve classroom time to engage in interactive conversations, feedback and higher-order communication activities. This is in line with the constructivist tenets that focus on guided interaction (Vygotsky, 1978).

Third, institutions ought to introduce AI literacy and orientation classes that will train students to use AI effectively-how to prompt, sustain conversations, reflect on feedback, and avoid superficial engagement. Guidance assists in transforming utilization into valuable practice and avoids ineffective dependency (Davis, 1989).

Fourth, to directly focus on anxiety, teachers ought to design low-stakes, anxiety-reducing assessment plans, such as portfolio-based speaking records, reflective journals, and gradual exposure exercises. Chatbots may be used as a rehearsal without formal assessment to reduce the affective filter (Krashen, 1982).

Fifth, there is a need to invest in context-sensitive chatbot systems that can address the needs of Pakistani learners, including supporting local accents, culturally relevant situations, and domain-specific wording. Increased contextualization will enhance authenticity and engagement of learners.

Sixth, institutions are advised to formulate ethical and usage guidelines that would clarify the right roles of AI in learning, data privacy and academic integrity. Although the current research is related to speaking, responsible use policies are critical towards sustainable adoption.

Seventh, the introduction of continuous monitoring and evaluation mechanisms should be introduced. With the help of analytics (e.g., frequency of interaction, response quality), educators can monitor the progress of confidence and fluency as well as give specific assistance.

Lastly, in the future, it is advisable that linguists, AI developers and teachers work together to achieve the desired goals of chatbot design and pedagogy so that the technological innovation is aligned with the needs of learners and the overall educational objectives.

REFERENCES

Ahmed, S., Khan, M., & Ali, R. (2021). Technology-assisted language learning in Pakistan: Challenges and opportunities. *Journal of Education and Practice, 12*(3), 45–58.

Akhtar, N., Ali, Z., & Hussain, T. (2023). Digital literacy and language learning challenges among university students in Pakistan. *Pakistan Journal of Educational Research, 6*(2), 112–128.

Ali, R., Khan, S., & Ahmed, M. (2024). Artificial intelligence adoption in higher education: A case study of Pakistani universities. *International Journal of Educational Technology, 11*(1), 77–92.

Bibauw, S., François, T., & Desmet, P. (2019). Dialogue-based computer-assisted language learning: A systematic review. *Computer Assisted Language Learning, 32*(8), 827–877.

Chapelle, C. A. (2001). *Computer applications in second language acquisition: Foundations for teaching, testing and research*. Cambridge University Press.

Dale, R. (2016). The return of conversational agents. *Natural Language Engineering, 22*(5), 811–817.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340.

Fryer, L. K., & Carpenter, R. (2006). Bots as language learning tools. *Language Learning & Technology, 10*(3), 8–14.

Godwin-Jones, R. (2018). Emerging technologies: Chatbots for language learning. *Language Learning & Technology, 22*(2), 1–12.

Horwitz, E. K., Horwitz, M. B., & Cope, J. (1986). Foreign language classroom anxiety. *The Modern Language Journal, 70*(2), 125–132.

Huang, J., Zhou, M., & Yang, D. (2021). Applications of artificial intelligence in language learning. *Computer Assisted Language Learning, 34*(3), 1–20.

Huang, X., Li, Y., & Zhang, L. (2022). Personalized AI learning systems in language education. *Educational Technology Research and Development, 70*(4), 1453–1470.

Iqbal, A., Ahmed, S., & Raza, M. (2022). Communication barriers in ESL classrooms: A Pakistani perspective. *Journal of Language Teaching and Research, 13*(2), 234–245.

Jia, J. (2020). Exploring the use of chatbot technology in language learning. *Educational Technology & Society, 23*(3), 1–12.

Khan, M. A., & Asif, S. (2020). Speaking anxiety among university students in Pakistan. *Journal of Applied Linguistics, 5*(1), 23–39.

Krashen, S. D. (1982). *Principles and practice in second language acquisition*. Pergamon Press.

MacIntyre, P. D., & Gardner, R. C. (1994). The subtle effects of language anxiety on cognitive processing in second language learning. *Language Learning, 44*(2), 283–305.

Raza, M., & Qureshi, S. (2021). E-learning adoption in higher education: Evidence from Pakistan. *Asian Journal of Distance Education, 16*(1), 67–82.

Shah, S., & Rehman, A. (2023). Classroom interaction and student confidence in ESL learning. *Pakistan Journal of Linguistics, 9*(1), 55–70.

Siddiqui, F., Khan, N., & Ali, H. (2024). Language learning challenges in higher education: A developing country perspective. *International Journal of Educational Studies, 14*(2), 98–115.

Tariq, H., & Malik, F. (2022). Student perceptions of digital learning tools in Pakistan. *Journal of Educational Technology Systems, 51*(1), 102–118.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

Winkler, R., & Söllner, M. (2018). Unleashing the potential of chatbots in education: A state-of-the-art analysis. *Proceedings of the Academy of Management Annual Meeting*.

Young, D. J. (1991). Creating a low-anxiety classroom environment: What does language anxiety research suggest? *The Modern Language Journal, 75*(4), 426–439.