

Student's Training and English Fluency: The Exploration of AI-Assisted Fluency Training to Promote English Fluency in Students of AJK

Rukhsana Ameer
rukhsana.usmanakb@gmail.com

Sania Ghaffar
saniaghaffar941@gmail.com

Kausar Riaz
Kausarriaz606@gmail.com

Corresponding Author: Rukhsana Ameer rukhsana.usmanakb@gmail.com

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ABSTRACT

This paper reviewed the efficiency of AI-based fluency training in enhancing fluency in speaking English among undergraduate learners at the Women University of Azar Jammu and Kashmir (AJK), Bagh. The quasi-experimental pretest-posttest control group design was applied where 60 students were put in experimental (AI-supported) and control (traditional instruction) group. The evaluation of fluency was based on structured speaking tasks which measured the speech rate, frequency of pauses, frequency of repair, analytic rating and willingness to communicate. Findings indicated that extensive gains on fluency performance and communicative confidence in the experimental arm were significantly high. The results show that planned AI-mediated orally speaking practice can improve oral fluency in EFL higher education settings.

Keywords: Artificial Intelligence, Speaking Fluency, EFL, Higher Education, Technology-Assisted Language Learning

INTRODUCTION

The ability to engage in educational migration, digital migration and cross-regional migration has led to the fluency of English being a core academic and employability skills in most of the multilingual societies. In an EFL situation, however, fluency cannot necessarily be a possession of vocabulary and grammar knowledge, but rather the ability to produce speech in a continuous, coherent and appropriate manner in real time, when subjected to the stress of planning and being required to communicate online. The everlasting problem with the school structures, whose emphasis is on reading-and-examines type of pedagogy is the fact that students are capable of retaining the data about the English language in the form of the still declamation, but they will never be capable of expressing themselves and staying in the flow of conversation. This variance is observable in the mass testing of speaking in Pakistan where many high school students are on low levels of proficiency and demonstrate little functional oral competence but they have spent years at school (Nageen et al., 2025). As a result of this, students require systematic practice experiences to strengthen fluency, requires feedback on their performance, and the affective impediments that they encounter should be reduced, which sometimes is not possible in under-resourced classrooms.

This problem is especially acute in Azad Jammu and Kashmir (AJK) where the given context might restrict the implementation of oral and communicative exposure in the long-term. The barriers, according to AJK, are revealed in the reports where the lack of special training of English instructors, classroom-based instructional test requirements, and classroom resources and learning environment constraints are the ones

(Mushtaq et al., 2021). The findings of the Ajman secondary education refer to instructional challenges undertaken by instructors and the low performance of students in the required literacy and teaching the English as a second language, which means that the implementation of communicative instruction is a problem that becomes difficult to manage consistently (International Research Journal of Education and Innovation, 2021). Little English language exposure (at home and within the community) among the learners implies that the development of fluency gets complicated, since fluency is founded on the repetitive, low-stakes speaking incidences that proceed to procedural language knowledge to automatic performance. These facts stimulate the task of identifying scalable, context-sensitive intervention, which could be integrated into classroom instruction without already assuming a significant amount of teacher time or access to native speakers.

The interactional practice in the applied linguistics implies that the process of the communicative competence and oral fluency acquisition is closely related: the learner is supposed to negotiate the meaning, turn-taking, re-formulating ideas, and to receive timely feedback that can potentially influence the next attempts. Even though, classroom realities in most EFL practice kill any desirability of speaking to short feedbacks or memorizing dialogues, restraining the repetition attempt-feedback-attempt process that drives fluency. Individual feedback on speaking is not an easy task to give in an environment where teacher to student ratios are high and students may not wish to speak as it would be a sign of embarrassment or damage to their self-esteem and anxiety may also be discouraged. The fact that the lack of exposure and factor of confidence may also prevent the emergence of the speaking and the decline in the willingness to use English orally is also pointed out in the studies conducted in Pakistan (Zahid et al., 2024). In this direction the mechanisms needed to enhance practice time and minimize the pressure on performance and provide all the feedback loops should be built into the AJK fluency training should be built in such a way that it is not wholly determined by the number of the classroom contact hours.

The recent advances in the field of artificial intelligence (AI) have predetermined what the so-called scalable practice of the language i-education may look like since it enables them to provide interactive, personalized, and on-demand speaking opportunities. UNESCO recommends that the AI systems would be in a position to support the concept of personalization and offering more learning prospects, yet it is vital to be extra cautious about issues of equity, governance, and faculty capacity to render the usage of technology a supportive, but not a substitutionary, aspect of human-concentrated education (UNESCO, 2021). The past few years saw the creation of AI-based tools that help learn a language not only beyond the features of the applications based on drills and processes but to the features of dynamically-interacting and automatic feedback along with the adaptive sequencing of the tasks. The given change is particularly topical regarding oral fluency because speech building depends on the number of performances and quickness of the reaction, which is difficult to sustain in the conventional classroom. The principle of the AI-aided fluency training, in the specified landscape, can be presented as the principle to be followed in the process of structured speaking training supplemented with the means of the smart systems that provide an opportunity to give prompts, model answers, compare the feedback, and repeat opportunities- functions which are prescribed by the essential principles in developing the fluency.

There are two AI affordances in fluency training especially used as conversational agents (chat/voicebots) that imitate the interaction and automatic speech recognition (ASR) that may record speech and give feedback. In the case of task speaking, AI chatbot may act as a usual partner with which to talk, and it produces additional learner talk and turns taking. Using an example, a school study involving integrating a voice chatbot in the capacity of an English conversation partner established that, the learners negotiated multiple conversational turns within a session, and experienced a strong potential space to develop perceived meaningful interaction which is usually lacking in regular EFL classrooms (Yang et al., 2022). Likewise, the practice with the inclusion of ASR can possibly allow numerous speaking trials with feedback on pronunciation and performance; the mixed-method data suggest that ASR with peer correction result in

high quality of pronunciation and speaking performance as compared to more traditional free of the feedback tasks (Sun, 2023). The importance of these strands to AJK is that they directly correspond to two common constraints, including the absence of conversation/absence of personalized feedback.

Along with earlier chatbots and an inquirer recognition software, big language models (LLMs) are a new area of interaction where the AI can assist more in conversation and longer and more open-ended dialogue and address a broad spectrum of intentions of the learner. Participants in the controlled study where an AI-mediated interaction platform was employed demonstrated a better result on a variety of speaking aspects (including fluency/coherence and pronunciation) and were more encouraged to communicate, and learners provided overall positive accounts of the format mediated by AI (Fathi et al., 2024). Similarly at the synthesis level, meta-reviewing of AI-based chatbots based on empirical studies published as of 2020-2024 indicate similar positive outcomes of productive skills and speaking specifically on a lower number of practice opportunities, real-time feedback, and reduced anxiety (Wiboolyasinar et al., 2025). However, such a limitation as inability to capture the subtleties of emotions and even superficiality of interpretation is also noted in the same literature, and this implies that the effective cultivation of the fluency must be as pedagogically as it is technologically imbued. As in the scenario in AJK, one can argue that the use of AI tools should be integrated with the process of systematic training (e.g. guided tasks, reflection, and teacher mediation) rather than the process of unstructured chatting.

However, it should be responsibly adopted because generative AI can lead to the dangers of privacy, accuracy, and overdependence. UNESCO provides global guidance on generative AI in education and research and focuses on regulation, transparency, and protection to ensure the safety of learners and learning integrity and suggests a human-centered orientation, which helps to retain agency and responsibility (UNESCO, 2023). The problem is not a thing in the abstract in the context of learning a language: faulty model feedback can correct mistakes, and information processing under unsafe conditions may drench the information on minors. Moreover, syntheses of research on ChatGPT in ESL/ EFL teaching provide warnings that, regardless of the affordances, such as personalization and learning opportunities, significant shortfalls are aided by untrustworthy information and loss of privacy and that careful evaluation especially in the area of speaking performance is quite recent (Lo et al., 2024). Therefore, not AI as a panacea, but rather an intervention that must be undertaken in regard to ethical concerns, task planning, and efficient results indicators, AI as an AJK-centered study.

Together, one can report that the literature body gives a valid rationale as to why in the context of the AJK, AI-driven pedagogical intervention has an opportunity of being considered: the field is said to be having pedagogical and systematic constraints to communicative practice, and the contemporary AI technology can offer the possibility to raise the communicative practices in terms of speaking disorders and the scale of those the feedback. Nevertheless, the significant gap is that most of the empirical research related to the use of AI during speaking practice is done in a different infrastructure, different characteristics of the students, and different institutional resources related to them, and there is not much done about school-based, region-specific usage, that can suit the local curricular setting. In addition, a body of measurement research in Pakistan suggests that the initial level of spoken proficiency might be low, implying that the interventions must be highly sensitive to the beginners-intermediate level of the digital literacy and advanced oral proficiency (Nageen et al., 2025). A comprehensive investigation in AJK would therefore be valuable in that (a) it reports baseline abilities and limitations, (b) it creates an AI-based training model that can be localized to teaching conditions and home-access parameters, and (c) it evaluates the result of fluency (e.g. speed, pauses, coherence and a desire to communicate) and their ethical, motivation, and implementation considerations. The given background contributes to the fact that the proposed study is practical and timely at the scholarly level since AI-based fluency training presents itself as the context-responsive approach to the problem of improving the English fluency among AJK students.

Statement of Problem

In Azad Jammu and Kashmir (AJK), most students have gone through years of mandatory English classes and still do not achieve functional oral fluency (that is, the ability to speak spontaneously in a reasonable speed, minimal disruptive pausing, and coherent, interpersonal discourse) because classroom conditions (large classes, instruction based on exams, limited communicative time, and lack of personalized feedback) limit the quantity and quality of speaking practice needed to procedural knowledge of linguistic performance into fluent performance; this Even though the current AI-based solutions (e.g., AI-mediated speaking systems, chatbots, and speech technologies) have demonstrated quantifiable potential to improve speaking skills, including fluency and desire to converse in an EFL environment (Fathi et al., 2024), an important gap in the body of local evidence on the subject is whether AI-mediated fluency training is viable, ethically usable, and educationally useful within the infrastructural, socio-cultural, and schooling contexts of AJK; in fact, the adoption of generative As a result, the lack of empirically probed, contextually modified AI-based fluency instruction models, which could possibly lower the current oral-fluency crisis of AJK students and yet comply with educational classroom limitations and the regulations of responsible usage, becomes the key inquiry.

Rationale of the Study

The rationale of the present study is rooted in the ongoing discrepancy between the long English lesson duration and poor oral fluency performance among students of Azad Jammu and Kashmir (AJK), where structural factors of the system, including the examination-focused approach to learning, the overall lack of communicative exposure, big classes, and teacher training, systematically obstruct the consistent practicing of speaking performance and providing the student with one-on-one feedback (Mushtaq et al., 2021). The expanse of the national level also supports the evidence that secondary students in Pakistan tend to show low speaking proficiency and there is a quantifiable disparity in functional oral competence despite the curriculum focus on teaching English (Nageen et al., 2025). Considering that the development of fluency involves the repetitive, high-feedback, low-anxiety interaction, AI-assisted speaking platforms supported by conversational agents and speech recognition technologies are a theoretically well-founded way of increasing the time that learners talk, as well as give feed-back on their performance, in which case the empirical study showed that speaking performance and willingness to communicate are improved (Fathi et al., 2024; Sun, 2023). Nonetheless, UNESCO (2023) points out that the application of generative AI in education should be contextually approved and ethically controlled which lack of domestic evidence in AJK. Hence, the scope of the present research is supported by the context-sensitive and evidence-seeking research aim aimed to assess whether AI-enhanced fluency training can address the procedure in terms of its effectiveness and responsibility to address the reported oral proficiency gap in the school context of AJK.

Objectives of the Study

The objective of the study was:

1. To find out the influence of AI-supported fluency training on English speaking fluency of university level students in Azar Jammu and Kashmir (AJK).
2. To analyze the effect of AI-based training on fluency on the willingness to communicate among the students and the confidence of the students in speaking English in comparison to the traditional teaching procedure.

Research Hypotheses

- The scores of English speaking fluency are not statistically significantly different between the students who have AI-assisted fluency training and those who receive the traditional instruction.
- The students who undergo AI-administered fluency training will achieve higher scores in English speaking fluency compared to those that receive conventional training.
- No statistically significant difference exists in willingness to communicate and speaking confidence of students that received AI-assisted fluency training and those that underwent the traditional methods course.
- Students who are subjected to AI-based fluency training would exhibit a much higher willingness to communicate and confidence in speaking in comparison with students taught the use of traditional teaching methods.

Significance of the Study

This research is valuable as it seeks to fill a longstanding and quantifiable knowledge gap between extended English proficiency training and low oral fluency achievement among Azad Jammu and Kashmir (AJK) students that provides an empirically-based course of improvement. Since the study is conducted through the systematic analysis of whether the use of AI as the means of delivering fluency training is effective in the context of a real classroom, the study goes beyond the theoretical promotion of education technology and offers the context-specific evidence on the value of this approach, its feasibility, and its ability to drive a specific change in speaking performance. The results may be relevant to the field of applied linguistics as they can extrapolate the existing research on language learning mediated by AI into a place with limited studies to improve the reactivity and regional sensitivity of the models. In practice, the research can help to educate teachers, curriculum planners, and policymakers about scalable interventions that can be used to enhance the amount of learner talk time, individualized feedback, and decrease speaking anxiety in resource-constrained settings. Moreover, the study can be used to provide a balanced innovation framework that ensures pedagogical integrity and a higher level of English fluency outcomes because it complies with the international invitations of responsible and evidence-based integration of artificial intelligence in education.

REVIEW OF LITERATURE

The oral fluency has been at center stage of assessing communicative competence since it illustrates the efficiency with which the learners are able to access the linguistic resources as well as produce speech when faced by real time conditions. The modern understanding of the concept of L2 fluency carves the most common dimensions of the concept: speed (e.g., speech speed), breakdown (e.g., silent/filled pauses), and repair (e.g., repetitions and self-corrections) and all of them are organized to give valid windows of learner processing and performance in the process of speaking tasks (Tavakoli et al., 2020). Empirical studies also reveal that the knowledge of L2 not only influences utterance fluency, but also cognitive fluency and even the L1 fluency tendencies, i.e. cognitive practice should form habitual situations of quick lexical retrieval, planning and monitoring in natural speaking situations (Kahng, 2020). These insights are relevant to school-level situations since the understanding of fluency is often made to recitation oriented and closer to accuracy, whereas measurable gains are achieved when students are subjected to interactive learning that is simultaneously time pressurized, meaning requires negotiation and monitoring at the same time. In turn, the role of repetition of tasks, interaction, feedback cycles, and performance-based evaluation as the

methods of enhanced automaticity and less disruptive pausing is more actively addressed in the research on fluency training (Tavakoli et al., 2020; Kahng, 2020).

In Pakistan--or more precisely in AJK--English acquisition is often restricted by the classroom reality of the system which does not allow a meaningful, sustained speaking practice. Studies on AJK secondary schools report various pedagogical obstacles such as the lack of specialized training, professional competence in teaching English, and the learning focus on exam that inhibits communicative strategies (Mushtaq et al., 2021). According to related evidence by AJ&K, institutional and classroom-related limitations, including crowded classrooms and restricted professional teacher training, predetermine the decrease in the individualized feedback and talk time of a student (Karim et al., 2021). The evidence of the standardized assessment at the national level shows that secondary school students have remained at the lower levels of the functioning level (A1-A2) of the CEFR levels, which points to an existing gap between years of schooling and functional speaking proficiency (Nageen et al., 2025). The convergence in results indicates that the deficit in fluency is not only the one imposed by an individual learner; it is systematically created by the lack of interactive exposure, a lack of the opportunity to engage with speaking at low frequency, and the instructional regimes that are being organized in accordance with written exams rather than oral performance (Mushtaq et al., 2021; Nageen et al., 2025).

One of the most effective explanatory strands of the speaking literature [the affective barrier to oral participation], is the low willingness to participate in oral communication and anxiety which may inhibit practice when opportunities are available. There are indications regarding Pakistani EFL classrooms that the state of foreign language anxiety is a negative predictor of willingness to communicate, whereas the presence of supportive social conditions (teachers, peers, family) could be used to facilitate learners willing to speak (Kalsoom et al., 2020). This has implications on the fluency as, low participation reduces the required practice density to automatize, and anxiety may enhance the phenomena of breakdown (e.g. longer pauses) by raising the cognitive load in the process of speech production. Hence, the theoretically based interventions of reducing the perceived risk, normalizing errors and offering supportive feedback are in place to enhance participation and development of fluency. The design of opportunities that prompt low-stakes and frequent attempts of speaking may be more effective than other options when students have restricted safe English communication contexts, such as AJK (Kalsoom et al., 2020; Nageen et al., 2025).

It has suggested technology-mediated language learning as an effective line of action to provide more speaking opportunities particularly in situations when a classroom is short of time and teacher attention. In this field, there has been a rise in the use of AI-based conversational agents (chatbots) since these can be used to simulate interaction, allow on-demand practice, and maintain an iterative conversation without the social pressures of peer or teacher-created assessment. Immediacy, ease of access, personalization, and the capacity to facilitate social presence are some of the common chatbot affordances identified through systematic reviews and associated with greater engagement and more language production frequency (Huang et al., 2022). Later synthesis that specifically targets EFL speaking practice goes on to report that chatbots have the potential to reduce speaking anxiety and aid pronunciation and confidence where it is also stated that the area is still developing and must have stronger designs and context-sensitive assessments (Du & Daniel, 2024). The application of the studied findings is the direct applicability to AJK due to its applicability to the constraints of the region: in the case where the amount of teacher feedback is limited, and limited time to speak, chatbots will be able to provide practice beyond class hours and, possibly, enhance the number of speaking turns necessary to achieve the desired level of fluency (Huang et al., 2022; Du and Daniel, 2024).

Classroom-based empirical research also illustrates the operationalization of AI chatbots to the development of speaking using the task-based design. One such study that has applied a task-based voice chatbot to EFL speaking classes indicated that students were able to participate in various speaking

activities with an AI interlocutor and assessed both the appropriateness of the tasks and the perceptions of the students, which demonstrates a viable roadmap towards rolling out the practice of using voice-based chatbots in schools (Yang et al., 2022). The reasons why such designs are noteworthy to the fluency training field is that fluency training relies on repeated practice in communicative condition, and not drills at the sentence level. It is also suggested that voice interaction suits better actual real-time processing need as compared to the text-only practice, which could thereby determine the speed and breakdown fluency characteristics as a result of frequent exposure to turn taking and time pressure. Although the results depend on both the quality of designs and the levels of learners, the evidence body is getting larger causes to suggest that pedagogical plausibility of AI interlocutors is achievable to provide more practice opportunities and minimize barriers to speaking participation (Yang et al., 2022; Du & Daniel, 2024).

In combination with chatbots, there are also automatic speech recognition (ASR) tools suggesting a significant AI-supported technique of practicing fluency due to the ability of learners to speak, get a prompt feedback in the system and repeat themselves in a few seconds. Mixed-method studies indicate that ASR-supported practice has the potential to enhance pronunciation and speaking performance, in combination with peer correction and learning cycles, indicating that the importance of feedback immediacy, as well as the role of iterative practice, are core to learning improvements (Sun, 2023). Evidence synthesis supports this argument: a meta-analysis on the effect of ASR on ESL/EFL pronunciation showed a medium overall effect and that explicit corrective message and medium and long duration treatment showed stronger results (Ngo et al., 2024). Even though the pronunciation is not exactly the same as the fluency, enhanced segmental control and repetition with the help of the feedback can decrease the repair behaviors and hesitation, which lead to the smoother flow of speech during communicative exchanges indirectly. In the case of AJK, the primary applicability of ASR in this case is scalability: the feedback capabilities could be dispersed among learners when time with a teacher is limited, which might result in more practice being necessary to achieve fluency levels (Sun, 2023; Ngo et al., 2024).

To be more exact, current studies on AI-mediated speaking instruction reveal that positive outcomes in terms of speaking performance and the desire to speak can be measured. According to one of the System articles, interactive speaking activities mediated by AI were more effectual than comparison conditions in enhancing the speaking skills and WTC of EFL learners with the help of standardized speaking performance assessment (e.g., IELTS speaking tests), and WTC measurements (Fathi et al., 2024). This area is particularly significant to AJK since it bridges the two bottlenecks reported in the local and national evidence, the lack of speaking proficiency and the barriers to participation due to the sense of anxiety and limited classroom interaction (Kalsoom et al., 2020; Nageen et al., 2025). In the case that AI-mediated interaction amplifies the volume of practice and also reduces the barriers of affect, this can establish a two-way route to fluency gains, more speech production (quantity), and smooth production regardless of less stress (quality). Nevertheless, such outcomes cannot be transferred without local validation as institutional factors, digital access of learners, exposure to language, and mediation of teachers vary among settings (Du and Daniel, 2024; Mushtaq et al., 2021).

The rise of generative AI (e.g. large language model chatbots) additionally opens up possibilities of the AI-assisted fluency training by facilitating more detailed dialogue, scaffolding that adapts, and individual prompts, yet also brings up issues that need to be tackled in the context of responsible research designs. The evidence of systematic review suggests that ChatGPT has been used throughout ESL/EFL spheres and often related to the provision of additional learning and customization, whereas possible risks include the provision of incorrect information, privacy concerns, and challenges of academic integrity (Lo, 2024). Since fluency education can include recording speech, or recording logs of interactions, the question of privacy and data governance is specifically acute in the area of school systems that have some regulatory ability. That is why the global direction tends to accentuate the fact that the educational adoption should be human-center, transparent, and based on the concept of building the capacity of teachers as well as on the

institution-readiness instead of deployment that is promoted by novelty (UNESCO, 2021; UNESCO, 2023). Consequently, effective fluency intervention in AJK should not merely be assessed but operationalize the measures regarding data confidentiality, safety of students, validity of the teaching and feedback and supervisory controls of teachers (Lo, 2024; UNESCO, 2023).

Ethical advice at the policy level offers a necessary context within which AI fluency interventions can be situated as the pedagogically oriented intervention, as opposed to the non-pedagogical technology-driven one. UNESCO policy-maker guidance emphasizes that it is necessary to implement monitoring and evaluation systems to develop strong evidence on the role of AI in teaching and learning which supports the need to develop well-designed instruments and frameworks to measure its impact in the context (UNESCO, 2021). In addition to this, the guidance of the UNESCO suggests that even in some countries, national regulations are lost in keeping up with the faster development of GenAI, and educational establishments in this situation are not well equipped to either certify tools or keep user information safe, a situation especially applicable to under-resourced surroundings (UNESCO, 2023). These aspects support the fact that in the case of AJK, no sign of advantage may be independent of the responsible use: the choice of the tools, teacher mediation, safeguards of the learners, and transparency of the assessment should be combined into the model of intervention. Consequently, the literature will promote the design of AI-aided fluency training as an assessed pedagogy, involving a repetitive speaking task, a feedback loop, and a fluency-sensitive measurement component, as opposed to unstructured fluency training, which is practice with an app (Tavakoli et al., 2020; UNESCO, 2021).

Combining the literature, the most persuasive reason to research AI-assisted training of fluency in AJK is the combination of (a) structurally constrained speaking practice and teacher feedback, (b) affective restrictions on participation, and (c) new discussion that AI devices can broaden interactive-speaking possibilities provided by scalable feedback. The local research points to the lack of training and limited classroom conditions as among the key obstacles of AJK secondary education, and the evidence of national assessment suggests a continuously low speaking proficiency among secondary students (Mushtaq et al., 2021; Karim et al., 2021; Nageen et al., 2025). The international literature proves that chatbots, ASR, and AI mediated interactive instruction can help to facilitate the development of speaking, its confidence, and willingness to speak, yet recommends a greater evidence level, its specific validation in context (Huang et al., 2022; Du and Daniel, 2024; Fathi et al., 2024). Thus, a targeted investigation in AJK may address a realistic empirical gap by deterministically testing whether AI-based fluency training yields significant improvements in the speed/breakdown/repair fluency aspects and enhances the intervention outcomes in terms of participation conditions in the conditions of a real school setting. This would play a practical role, such as informed by such work on how to scale (as well as scholarly), and also an academic benefit, such as regionalizing AI-assisted fluency research and aligning it with global expectations of responsible AI in education (UNESCO, 2023; Lo, 2024).

RESEARCH METHODOLOGY

Research Design

It utilized a quantitative quasi experimental pretest posttest controlled group study to investigate the role of AI assisted fluency training in enhancing English speaking fluency in undergraduate students undertaking courses at the Women University of Azad Jammu and Kashmir (AJK), Bagh. The design was chosen since uninterrupted classes were adopted and individual level assignment could not be carried out in the university since the institutional level would not allow this. They were divided into two groups: one of the experimental, where the participants received AI-assisted fluency training, and one of control, where the participants received the training on the traditional speaking practices. The two groups were pretested and

post tested and this aimed at revealing whether statistically significant differences were noted in fluency performance after the intervention.

Population and Sample

Undergraduate students who were pursuing BS programs at the Women University of AJK, Bagh, where English was taught as a compulsory or foundation course, comprised the population of the study. The purposive sampling method was used to choose two intact subsets of students in the first or second semester who are enrolled in English language classes within the time frame of the data collection. A total of about 60 students were picked and two intact classes used as the experimental and control group comprising about 30 each. The participants were similar regarding the age, academic background and previous experience in learning English. The pretest fluency scores were used as a baseline in order to establish the equivalence in baseline conditions.

Research Instruments

A speaking performance test which has been developed by a researcher was used to test the levels of fluency in English on pretest and posttest levels. This test consisted of three tasks that are structured speaking procedures in accordance with university level students: (1) a monologue about a particular academic topic (2-3 minutes), (2) discussion task about the picture or issue, (3) guided interaction based on pre-set prompts. The tasks were designed in parallel forms to allow the tasks to be comparable during pretest and posttest with little effects of memorization. Audio-taping of all responses was done in order to be analyzed objectively.

The evaluation of fluency performance was through measurable scores among them being the speech rate (words per minute), the mean length of run, the frequency of pauses, the average duration of the pause and the frequency of repair (repetition and self-corrections). Also, an analytic fluency rubric developed by a researcher was used in rating coherence, smoothness, and overall delivery using a scale of five points. Content validity was ensured with the assistance of the subject experts in applied linguistics.

Reliability and Validity

The speaking tasks and scoring rubric were pretested with expert opinion by instructors in English language at the university level in order to validate their content validity. A pilot study was used to test instructions and scoring procedures using a limited sample of students that were not used in the final sample. Two raters who were independent were trained to rate performances that were recorded and inter-rater reliability was determined by using intra-class correlation coefficient. Essential changes were done in order to have similar scoring. These are measures that were put in place to enhance reliability and objectivity of the measurements.

Treatment Procedure

The test population received eight weeks of training in the English language with the aid of AI in terms of fluency practice. Conversational AI and speech recognition software were incorporated in the structured speaking activities that needed repetition and oral production and a stimulating interaction. The students were to perform guided academic discussions, opinion-based arguing and simulated conversations through the use of the AI system. Automated feedback concerning the speech rate, pauses, pronunciation, and coherence was created, and various practice opportunities were offered to influence the fluency development.

The experimental group received the same information that was taught in the course of the control group by the means of classical methods of teaching. Practice speaking was applied by means of presentations in the classroom, discussions in pairs, and questioning led by the teacher without the use of AI. Both groups were made to go through with the same amount of time of instruction and the syllabi cover to facilitate a level of fairness in comparison.

Data Collection and Data Analysis.

Both groups took pretest and post test data which was analyzed using statistical software. To summarize fluency performance, descriptive statistics included mean, standard deviation and were calculated. Paired-samples t-tests were used to establish whether the experimental and control group had achieved improvements within the group and independent-samples t-tests were done to compare posttests conducted in the experimental group versus the control group. Effect sizes were done to ascertain the extent of the intervention. Historical significance was fronted at the level of 0.05.

Ethical Considerations

The administration of the Women University of AJK, Bagh gave official approval of conducting the study before the study was conducted. Participants were informed and ensured confidentiality in the process of research. It was on a voluntary basis and students were guaranteed that their assessment was not affected by participating in the study in terms of academic performance. None of the information in the form of audio recordings and data obtained was ever used outside the scope of the research, and was kept safely.

RESULTS

Table 1 Inter-Rater Reliability for Analytic Fluency Rating Scale

Measure	ICC	95% CI
Analytic Fluency Rating Scale (Total)	.78	[.70, .85]

Table 1 shows the inter-rater reliability of the Analytic Fluency Rating Scale by using Intra class Correlation Coefficient (ICC). The ICC of .78 is a sign of high coincidence between the two raters. The fact that the 95 percent confidence interval [.70, .85] was within the range of 0.70 and 0.85 indicates that the estimate of the reliability is statistically stable and is within an acceptable parameter. In general, the findings affirm that the scores on the fluency were always allocated and can be analyzed.

Table 2 Internal Consistency Reliability for Questionnaires

Scale	Items (n)	Cronbach's α
Willingness to Communicate	5	.79
Speaking Confidence	5	.76
Total Questionnaire	10	.78

Table 2 shows the internal consistency reliability of tool questionnaires by use of Cronbach alpha. The subscale of the WTC ($\alpha = .79$) and the Speaking Confidence ($\alpha = .76$) show good reliability. The scale

reliability ($\alpha = .78$) shows that the internal consistency among the 10 items is good. These findings substantiate the view that the questionnaire items were continually representing the targeted constructs.

Table 3 Independent Samples t-Test Comparing Pretest Fluency Scores between Groups

Group	n	M	SD	t	df	p
Experimental	30	10.87	2.11			
Control	30	10.65	2.04	0.41	58	.684

Table 3 documents independent samples t-test which was done to compare the pretest fluency scores of experimental and control group. The mean score of the experimental ($M = 10.87$, $SD = 2.11$) and control group ($M = 10.65$, $SD = 2.04$) were very similar. The t value of obtained 0.41 and 58 degrees of freedom was not statistically significant ($p = .684$). This shows that, there was no significant difference in the speaking fluency of the groups before the intervention. The mean difference is small indicating there is not much variation in baseline performance. Thus, the pre-treatment group equivalence was met.

Table 4 Paired Samples t-Test for Experimental Group Fluency Scores

Test	n	M	SD	t	df	p	Cohen's d
Pretest	30	10.87	2.11				
Posttest	30	15.94	2.36	12.84	29	< .001	2.34

Table 4 demonstrates the paired samples t-test outcomes of the fluency scores of the experimental group regarding the fluency score prior to the AI-assisted intervention and after the administration of this intervention. The average score on fluency was significantly greater during pretest ($10.87SD = 2.11$) than in the posttest ($15.94SD = 2.36$). This was statistically significant, $t(29) = 12.84$, $p < .001$, which means that it was not just by chance but rather the improvement was achieved. Large effect size (Cohen $d = 2.34$) implies a huge practical impact of the intervention. The effect of the mean gain indicates the significant improvement of the speech rate of students, decreasing the frequency of pauses, and delivery fluency. All these findings strongly justify the success of AI-aided fluency training in enhancing the English speaking fluency of university students.

Table 5 Paired Samples t-Test for Control Group Fluency Scores

Test	n	M	SD	t	df	p	Cohen's d
Pretest	30	10.65	2.04				
Posttest	30	11.72	2.18	2.31	29	.028	0.42

The table 5 has the findings of the paired samples t-test of the pretest and posttest fluency scores of the control group. The average score went a little too high (10.65 $SD = 2.04$) to 11.72 ($SD = 2.18$). The difference though statistically significant, $t(29) = 2.31$, $p = .028$, was not particularly large. The effect is small and the effect size (Cohen $d = 0.42$) shows that the impact is small in nature. This is an indication that the traditional teaching provided only slight improvement in the fluency of speaking. The gain was

much less in comparison with the experimental group, which demonstrates the superior efficiency of the AI-assisted training.

Table 6 Independent Samples t-Test Comparing Posttest Fluency Scores

Group	n	M	SD	t	df	p	Cohen's d
Experimental	30	15.94	2.36				
Control	30	11.72	2.18	7.42	58	< .001	1.91

Table 6 contains the independent samples t-test of posttest scores in fluency of the experimental and control group. The experimental group (M = 15.94, SD = 2.36) had by far higher scores than the control group (M = 11.72, SD = 2.18). The statistical significance of the difference was greater, $t(58) = 7.42$, $p < .001$. The effect size (Cohen's $d = 1.91$) is large, which shows that there is a large practical difference between groups. These findings affirm that using AI in fluency training was significantly more efficient than conventional training in enhancing speaking fluency.

Table 7 Comparison of Objective Fluency Indicators at Posttest

Variable	Group	M	SD	t	df	p
Speech Rate (WPM)	Experimental	108.7	12.1			
	Control	87.2	10.5	6.85	58	< .001
Pause Frequency (per min)	Experimental	7.6	2.1			
	Control	12.8	2.4	8.14	58	< .001
Repair Frequency (per min)	Experimental	3.1	1.2			
	Control	5.4	1.5	6.27	58	< .01

Table 7, contrasts the group of experimental and the control group on objective measurements of fluency at the posttest, which include: speech rate, pause frequency, and repair frequency. The experimental group had a larger mean speech rate (M = 108.7, SD = 12.1) than the control group (M = 87.2, SD = 10.5) and it was statistically significant, $t(58) = 6.85$, $p < .001$. The experimental group tended to pause less than the control group (M = 7.6, SD = 2.1) did, per minute, significantly, $t(58) = 8.14$, $p = .001$. Likewise, the extent to which the group of the experiment had a lower frequency of repair than the control group (M = 3.1, SD = 1.2) vs. control group (M = 5.4, SD = 1.5) is statistically significant $t(58) = 6.27$, $p < .01$. These findings have shown that the experimental group uttered words faster, had fewer pauses, and did not make self-corrections. All-together, the results reveal the enhancement in all of the fundamental dimensions of fluency, i.e. speed, breakdown, and repair.

Table 8 Paired Samples t-Test for WTC Scores (Experimental Group)

Test	n	M	SD	t	df	p
Pretest	30	2.98	0.54			
Posttest	30	4.11	0.49	10.72	29	< .001

The table 8 shows the result of paired samples t-test between the scores of the experimental group. The average point on the test went up to 4.11 (SD = 0.49) on the posttest compared to 2.98 (SD = 0.54) at pretest. This was statistically significant, $t(29) = 10.72$, $p < .001$. The mean score change has significantly increased which means that the students have become more inclined and comfortable to speak English at the end of the intervention. The standard deviations were quite small indicating uniform improvements among the participants. These results confirm that the use of AI in human fluency training has a positive effect on the communicative willingness of students.

Table 9 Independent Samples t-Test Comparing Posttest Scores

Group	n	M	SD	t	df	p
Experimental	30	4.11	0.49			
Control	30	3.19	0.5	6.14	58	< .001

Table 9 below shows the independent samples t-test scores of posttest between experimental and control groups. The experimental group was superior to the control group in terms of its mean score ($M = 4.11$, $SD = 0.49$ vs. $M = 3.19$, $SD = 0.50$). This difference was found to be statistically significant $t(58) = 6.14$ $p < .001$. This means that the students that were taught fluency by AI were well ahead in their willingness to converse in English as compared to that of students taught through traditional methods. The standard deviations are similar depicting the same variability among groups. In general, the findings support the positive effects of the intervention on the communicative confidence of students.

FINDINGS AND DISCUSSION

The results show that AI-based fluency training resulted in a large growth of English speaking fluency among the students in the university level. The experimental group had a significant improvement in the overall fluency scores between pretest and posttest; the control group had a minimal improvement between the pretest and posttest through the conventional instructional practices. The statistically significant difference in the post-intervention results of the groups indicates that the use of structured AI-assisted speaking practice proved to be more effective compared to the traditional classroom approach. These findings can be compared with modern views on second language acquisition, which highlights the necessity of repeated and largely feedback-intense practice as the means of attaining automaticity and fluency in speech.

An even more detailed analysis of objective indicators of fluency supports this finding even more. The AI-assisted training resulted in students having a higher rate of speech, less number of pauses and lower occurrence of self-repairs than those who belonged to the control group. The progress in these aspects: speed, breakdown management, repair management, will show the progress of mucosal elements of fluency. The decrease in the hesitation and reformulation implies more efficient processing and more automatization of linguistic processes. Conversely, the small but significant gains in the control group suggest that there

may not be enough exposure to routine classroom speaking activities on its own to effect significant improvement in spontaneous oral performance.

Besides the performance-related benefit, students that received AI-mediated training noted much greater degrees of readiness to communicate and speaking confidence. It also indicates that the growth of communicative readiness shows that the intervention decreased anxiety levels and promoted oral work with increased participation. This result has pedagogical implications, since affective variables like confidence and lower levels of nervousness are strongly related to high levels of speaking engagement and fluency growth in the long term. The findings are thus an indication that the intervention included both cognitive and affective aspects of language learning.

These findings are credible as the reliability analysis indicates. The inter-rater reliability of fluency scoring was high, which shows that there was consistency in the rating done by the raters. Equally, internal consistency of the questionnaire proved consistent way of measuring communicative willingness and confidence. The reliable coefficients adopted are satisfactory since the instruments applied in the study were reliable enough to be statistically interpreted. This enhances the confidence in the news they have heard about the improvements and decreases the chances that the results were due to measurement error.

On the whole, the findings of the two studies indicate that AI-supported fluency instruction can be a systematized and efficient method of promoting fluency in English speaking in the context of a higher education institution. These objective changes in the rate of speech, decreased hesitation, lower rates of repair, and higher levels of communicative confidence are all evidence that technology-based, feedback-driven speaking can be an effective means of improving oral proficiency. The findings play a role in expanding the existing body of evidence that AI-based tools can improve the performance outcomes and increase learner's engagement when used in a systematic manner.

CONCLUSION OF STUDY

The present study finds that training AI-based fluency enhancing had a beneficial impact on the development of English speaking fluency among the undergraduates at the university level. The practiced technology-mediated speaking student's objective improved in terms of speech rate, lesser pauses and less self-corrective practice. Such differences indicate tremendous improvement in the basic spheres of fluency, which implies higher levels of automaticity and more fluent speech production. AI-assisted practice proved as an improved technique of improving spontaneous oral performance compared with the conventional instruction technique.

The other findings of the study are that the willingness of the students to communicate and speak without hesitation was positively influenced by the use of AI-assisted training. Individuals who underwent the intervention claimed to be more equipped to talk and they were also less nervous when doing oral work. This implies that the integration of AI tools not only supports the language development, but also entraps the affective barriers, which are likely to hinder the spoken input. The twofold performance and confidence enhancement proves the general pedagogical significance of structured AI-based learning environments.

Overall, the findings support the idea that AI-based fluency training may lead to a substantial improvement in speaking fluency in case it will be introduced into the curriculum of the university English courses. The application of AI assisted instruction in the context of enhancing oral communication skills in the higher education environment can be a potential viable and scalable solution when applied systematically and potentially well evaluated. The empirical evidence given in the research paper allows using intelligent technologies as an addition to the traditional language instruction activities.

RECOMMENDATIONS OF STUDY

Based on the findings of the study, the application of AI-aided fluency training is proposed to be included in the English language courses available at the university level to enable students to acquire speaking skills. The structured AI-assisted speaking exercises which involve the immediate feedback and the possibility to repeat the same exercise should be the routine part of coursework. Such an integration will be able to help the students to have higher speech rate, less hesitation as well as gain more control of spontaneous oral production. Colleges may also consider making use of a blend of conventional instruction and technology-enhanced speaking occurrences in such a manner that they will maximize on education.

It is also implied that the language teachers should be equipped with the professional growth and training on the effective application of AI-based tools in classrooms. The guidance should be done in an appropriate way to ensure that technology is implemented in a formal way rather than informal way. The teachers will be supposed to prepare model activities, test the student performance, and provide the human and the automated feedback. They also ought to improve the institutional backup like accessibility to digital applications and stable web facilities so that implementation can be successful.

Finally, it is proposed that in the future, research should be expanded to cover the area of study in other spheres of academic specialization, level of expertise and institutions. To monitor the long-term outcomes of AI-mediated fluency training, the longitudinal ones can be applied. Other variables that may be examined will be pronunciation accuracy, interactional competence and motivation among the learners. The validity and generalizability of the AI-based instruction regarding speaking in the long term will be explained with references to the accumulated volume of evidence in diverse pedagogical contexts.

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