



## **AI-IMPACT ON LANGUAGE LEARNING**

Dr Manjunath.B.Kori

Associate Professor, BLDEA's J.S.S College of Education, Vijayapur.

### **Abstract**

This research paper investigates the impact of Artificial Intelligence (AI)-based instructions on improving English language speaking abilities and fostering self-learning in real-life environments. In today's educational landscape, AI-based applications have proven to be transformative tools, igniting learners' passion and supporting interactive language learning activities. The study was conducted with 120 engineering students learning English as a Second Language (ESL), who were randomly assigned to either an experimental group receiving AI-based instructions or a control group receiving traditional instructions. Pre- and post-tests were administered to evaluate the students' English-speaking abilities and self-learning skills, utilizing the Rosetta Stone mobile application, which incorporates various speaking activities, focused exercises, pronunciation feedback, and a speech recognition tool. The results indicated that the experimental group showed significant improvements in speaking skill components—accuracy, vocabulary, fluency, and pronunciation—compared to the control group. The findings suggest that AI-based instruction effectively enhances English language speaking skills among ESL students and improves their self-regulatory processes. These results demonstrate the potential of AI technology to enhance language acquisition experiences and promote learners' self-reliance and cognitive processes in speaking.

Keywords: EFL context, AI-based instructions, , Speaking skills, Self-regularity practices.

### **INTRODUCTION:**

In the last few decades, the introduction of technological devices into education has transformed teaching approaches, particularly personal computers becoming common in educational institutions (Ruiz-Mercader et al., 2006). This technological revolution has allowed educational institutions to improve their curriculum by introducing online classrooms for teaching purposes (Hamuddin, 2018). Among the many technical developments, artificial intelligence (AI) has become an effective tool in education, particularly in oral communication, which has made amazing progress (Pokulevska, 2018). The incorporation of AI is motivated by the need to promote the acquisition of languages within virtual environments, freeing learners from time limitations and physical classroom surroundings, allowing for easy usage of learning resources and providing contact with classmates and instructors (Hamuddin, 2018; Ahmad et. al., 2021).

Moreover, artificial intelligence is an effective instrument for igniting student excitement and promoting collaborative language acquisition activities, which are essential in today's educational context. For instance, in recent years, artificial intelligence (AI) has positively affected the field of English as a Second Language (ESL). Artificial intelligence systems use speech recognition technologies to detect and comprehend students' speech in a way comparable to humans. This



capacity is particularly valuable in situations when native speakers of English are not easy to find to enhance learners' ability to communicate. It is important to note that, as the use of AI in these circumstances is exciting, it is still in its early phases, with significant advances in automated speech recognition occurring just in the early 2010s.

Many studies have investigated the impact of artificial intelligence on the development of speaking abilities among learners of the English language (Junaidi, 2020; Kang, 2022). In this regard, Hill et al. (2015) examined human-human interactions compared to AI-human communications, discovering that learners were more engaged in dealing with AI than interacting with contemporaries. In the same way, Kang (2022) contrasted learner-AI interactions to learner-native speaker interactions, revealing the critical impact of AI in improving learners' speaking abilities. Junaidi (2020) validated these findings, revealing that AI-assisted education improved learners' total speaking ability, including fluency, grammatical accuracy, vocabulary, and pronunciation.

Self-control of learning is a fundamental idea in education that has received much focus, especially in language acquisition. Zimmerman (1989) explains SRL as a proactive method in which learners actively manage and supervise their cognitive abilities and their metacognitive, inspirational, and emotional aspects to achieve their educational goals. This multidimensional construct comprises many strategies and techniques, including goal setting, self-regulation, strategic thinking, self-awareness, and motivational control (Pintrich, 2000). SRL enables students to take responsibility for their educational adventures, accommodate changes, and improve their academic outcomes. It develops as a cyclical journey of vision, effectiveness, and self-regulation, involving individuals setting goals, implementing approaches, and assessing their achievement, all of which significantly affect their academic results (Zimmerman, 2002).

The practical description of SRL in this work is based on Seker's (2016) model, which is motivated by popular SRL models in the area of acquisition of second languages, mainly focusing on Boekaerts' (1997) theory and Oxford's (1990) L2 instructional approach assessment.

Investigation of self-regulating learning is critical in this study because it provides a linchpin for understanding the complex interactions that occur since artificial intelligence (AI) instructions connect with learners' participation, incentive, and cognitive approaches during their language acquisition journey (Chang, 2005). This extensive analysis not only brings insights regarding how AI affects these essential features but also provides an in-depth comprehension of the internal processes that drive efficient learning of languages. As a result, the study's findings are expected to provide vital information for refining and improving pedagogical techniques adapted to the particular demands and tastes of students who learn languages in AI-integrated learning environments.

## **LITERATURE REVIEW**

The team-based communication techniques used in this study are consistent with the concepts related to social constructive promoted by Vygotsky (1984) across both respondent categories. Vygotsky (1984) argued that encounters with people with more abilities and intelligence allow students to assimilate knowledge and gradually achieve greater degrees of self-awareness.



Vygotsky (1986) states that "every function in a child's cultural growth appears twice, i.e., initially on the level of society and after that on one's stage; initially, among individuals (inter-psychological), and then within the child." The area of proximal progress, which is central to Vygotsky's social-constructionist hypothesis, considers the break between the learners' present state of solving problems and their capacity for enhancement when engaging in working collectively problem-solving games with their skilled classmates.

Kim (2008) found that learning together in class enables students to assist each other in achieving their Zone of Proximal Development (ZPD) across different language acquisition roles. This is accomplished by assigning responsibilities to students of varying proficiency levels based on their language goals and activities. Through collaborative efforts on language learning tasks, such as group or pair work, students develop their language skills and reach their ZPD. In this study, the control and experimental groups followed Vygotsky's social constructivist approach, engaging in interactive speaking exercises with peers. However, the experimental group utilised AI to access their ZPD, while the comparison group achieved this through joint speaking activities.

## **METHODOLOGY:**

The current research included 90 B.Ed. students from BLDEA's J.S.S College of Education, Vijayapur. The study population includes 52 male and 38 female pupils. The learners participate in one out of five conversation gatherings presented by the multiple organizations that provide Artificial Intelligence (AI) speaking teaching. This survey included a combination of English-speaking institutes and college-level courses, every one of which was acknowledged for their dedication to offering high-quality language learning. Since there were no significant variations in student profiles or English language competency among the institutes, it is important to note that each one provided a variety of supplemental materials and assistance facilities to aid language acquisition. Language laboratories, conversation groups and accessibility to online educational tools were also contributing factors.

A randomised controlled study with multiple evaluations was conducted to assess the efficacy of AI-based speaking teaching (Deaton & Cartwright, 2018). Before the research investigation, all subjects gave well-versed printed approval. The assessment Pre-test was taken earlier than the program of study began, throughout the initial two program sessions and following the final course activity. One control group took a regular speaking course at each organisation, and the experimental group obtained Artificial Intelligence (AI) speaking coaching. Both sessions took place simultaneously, based on the AI-supported training provided by the group of investigators and assigned three senior language instructors working with the current investigator. The Artificial Intelligence (AI) speech training was the same for every single group.

To accomplish the selection of the two courses, the Artificial Intelligence (AI) path and the traditional path were displayed simultaneously as the 'English Speaking Course.' This course-tandem strategy required learners to participate in both AI-based and traditional classes simultaneously, exposing them to both instructional techniques.



In conclusion, the pre-test results have determined to account for a few variations in the individuals' baseline communication abilities earlier than the preparation program started. The organised variables improved the correctness of the regression results and eliminated every possible fault reasoned by variations connecting the two categories early in the experiment. The accessibility of the regulating features suggested that any changes in learners' communication abilities and self-control may be certified to Artificial Intelligence (AI) supported verbal communication orders rather than other features taken as a whole English ability.

The conditional variables were evaluated on four speaking skills factors as a post-test. To evaluate the results of different pre-test conditions and the differences in outcomes between individuals with low and high pre-test results on the dependent variables, the pre-test attainment and the interface between the course and pretest results were incorporated as predictors.

AI-supported English language learning App- Rosetta Stone:

Rosetta Stone is an AI app for learning the English language and is well-known for its innovative approach to language acquisition. After its start in 2011, Rosetta Stone has become a worldwide renowned and popular language acquisition system, establishing itself as the preferred AI-powered language learning resource. The realistic speaking drills are a key component of Rosetta Stone's language acquisition program. These tasks involve students in spoken conversations with the program, forcing students to reply to suggestions and queries in the target language. These encounters are critical for improving proficiency in speaking because they require students to communicate their opinions and ideas orally.

The speech element of Rosetta Stone stands out for its immediate evaluation approach. As learners react to instructions, a Chabot equipped with AI carefully evaluates several aspects of the student's language skills, including accuracy, pronunciation, fluency, and vocabulary. This immediate feedback system is enabled using machine learning methods that rigorously analyze student outcomes. As a result, students obtain individual feedback adapted to their specific language needs, allowing them to make instant revisions and gains in their ability to speak (Kessler, 2023). Rosetta Stone also strongly emphasises encouragement by seamlessly integrating games onto the website. Students go on a course in which they accumulate points, finish assignments and become entitled to extra tasks as they progress, creating a sense of accomplishment and motivating continuous practice.

### **METHOD IMPLEMENTATION:**

In the present research, we used a comparative approach to look at the effect of Rosetta Stone, an Artificial Intelligence (AI) based language acquisition app for language proficiency and self-control in the ESL environment. Students received a random allocation to be part of either the treatment or a control group. The treatment group was taught using the Rosetta Stone app, which uses technology that processes natural languages to improve proficiency in languages throughout several skills, for instance, LSRW (Listening, Speaking, Reading and Writing). The study examination focused on speaking skill through this application. The effort relied heavily on the Rosetta Stone AI Chabot, which provided learners with English instructions and challenges.



Participants were then asked to reply to all of these questions, and the chatbot generated immediate comments on several parts of how they spoke English skills fluency, vocabulary, pronunciation and accuracy.

The outcome was created using machine learning techniques that assessed learners' accomplishments, allowing the Chatbot to provide customized advice based on each student specific requirements. The intervention consisted of group games and conversations, which allowed students to hone their abilities to speak in an extra comfortable context. Additionally, students could track their achievements using the Rosetta Stone app, which supplied with rewards and feedback on their entire acquisition of language experience. As a result, the control group was taught throughout a more typical speaking program. The activity focused on developing speaking abilities through group discussions, games, role plays, including presentations. Whereas this training program offered students the opportunity to enhance the learners' speaking abilities without any fear in an organized atmosphere and it did not utilize any AI application.

In the present research, regular and precise implementation of the AI-based speaking instruction was important. To maintain treatment adherence and evaluate the quality of treatment throughout every cooperating organizations and groups of people, strict protocols were adopted (Moncher and Prinz, 1991). In the beginning, intensive courses were held for both investigators and the English teachers in charge of providing AI-based speaking teaching. This session included extensive instructions on how to efficiently use the Rosetta Stone application, organize speaking tasks, and provide helpful input to participants.

Several unexpected assessments were conducted during the intervention period to ensure ongoing evaluation of treatment integrity. These findings were made at different times during the investigation at each involved organisation. The major goal was to ensure that conversations were provided according to the specified concept. To guarantee presentation similarity, a checklist was developed to track the implementation of speaking training within the two groups. It addressed critical issues, such as the extent of the speaking exercises, the exact types of tasks used, and the kind of evaluation supplied to students. The English language instructors in charge of providing speaking training correctly filled out this list of requirements for every class.

The researchers educated the language teachers on the assessment of both control and intervention courses on a regular schedule. The assessment examined teachers' understanding of the instructional materials, facilitating group interactions, and capacity to deliver constructive feedback to the students. The assessments were performed regularly to ensure that the education level remained consistent. During the trial, complete commitment to the targeted intervention schedule was observed. The variations from the specified action were carefully noted and corrected. The rigorous keeping track of program reliability was critical for maintaining the validity and reliability of the research results, allowing any differences observed in results between the intervention and control groups to be comfortably assigned to the assistance instead of changes in the method of instruction.



## **DATA ANALYSIS:**

In the data analysis section, the post-test was conducted by giving role-play conversations to determine the impact of the strategy and to guarantee that the participant populations were comparable at the start of the investigation. The researchers employed several analyses to decide if the procedure was beneficial and to make sure both groups were identical at the start of the trial. A two-tailed  $t$ -test was performed on all control and dependent variables to assess baseline equivalency. The aim was to verify the differences detected involving the two categories at the end of the examination, which were associated with interference rather than pre-presented differences. Numerous linear regression analyses were utilised to assess the impact of the intervention. The analyses were conducted using M plus Version 7, which employed the highest probability of strong prediction. The percentage of mislaid data sorted amid 1.8 and 5.7% by the bigger pace stemming from a lack of learners' during the post-test. The study found no significant difference in dropout rates between control and investigation groups ( $X^2(1, 95) = 1.09, P = 0.273$ ), viewing that mislaid data was random. To handle missing data, the full-information value prediction was used. To evaluate the training success, the direct hypotheses and a tailed test of consequence were performed. The degree of significance ( $\alpha$ ) was put to 0.05 to calculate the numerical importance of the outcome. The present technique was applied to assess whether the training program improved the IELTS speaking skills, including vocabulary, accuracy, fluency, and pronunciation. Furthermore, the result of an Artificial Intelligence (AI) program on self-discipline was examined.

To evaluate the effectiveness of the training, aimed at hypotheses were developed, and one-tailed analysis was used for reliability. There is a significance set at 0.05 to assess the statistical value of the results. The procedure was implemented to observe whether the action of the process improved in language components such as Fluency, Accuracy, Vocabulary and Pronunciation.

Furthermore, the outcome of the AI approach to learning or control has been examined. The control variables were included to improve the regression coefficients' quality and reduce any possible prejudice caused by initial differences among groups. The factors were general English proficiency, nervousness when speaking, and pretest results. The dependent variables were measured using post-tests for every four speaking ability variables.

In order to examine the effects of pretest variables and varied outcomes for individuals with high and low preliminary test results on the dependent variable, the pre-test score and course pre-test score interaction terms were included as predictor factors. If there was evidence of a substantial connection phrase, the result of taking the course differed depending on students' initial score on the dependent variable. Further predictive variables were included to assess the influence of preliminary score disparities and various results among individuals with different pre-test scores. These factors included the pretest score and the course-pretest score contact category.



**RESULTS & DISCUSSIONS:**

Table 1 shows the mean and average standard deviation for each category throughout the two stages of the test. It displays information regarding four dependent factors (Accuracy, Vocabulary, fluency, and Pronunciation) and one control variable.

Table 1: The mean and average standard deviation (SD) for every category in both the Pre- and Post

Speaking Components                      Pre-test Post-test  
 Control Group Research Group                      Control Group Research Group

Speaking Components	Pre-test				Post-test			
	Control Group		Research Group		Control Group		Research Group	
	SD	MEAN	SD	MEAN	SD	MEAN	SD	MEAN
Fluency	0.49	4.14	0.54	4.23	0.57	4.52	0.39	4.94
Vocabulary	0.59	3.63	0.68	3.85	0.53	4.09	0.57	4.78
Accuracy	0.48	4.22	0.71	4.26	0.46	3.97	0.83	5.32
Pronunciation	0.63	3.53	0.54	3.77	0.82	4.13	0.67	4.91
Self-control	0.61	2.31	0.64	2.28	0.73	2.89	0.72	3.34

BEC scores were also used to assess English language competency. A detailed inspection of the pre-test values given in Table 1 reveals minor set variations in a few factors. On the other hand, to establish the statistical consequence of these differences, a self-control model t-test was employed. The tests found no notable variations between the control and experimental groups based on each of the pre-test factors ( $p > 0.05$ ).

This thorough examination demonstrates that both groups were initially similar in the initial phase of the trial, guaranteeing that any future improvements in the ability to speak and self-control were a result of the practising rather than existing variations in competence. The above data, in Table 1, also illustrates how the early mean score for every category across all factors is nearly identical, with no significant differences within them at the start of the study. Post-session results revealed that the experimental group exhibited superior performance in all aspects of speaking abilities and self-control compared to the control group, indicating a positive impact of the intervention on these skills. On the other hand, there was no momentous variation between the two groups, such as the control variable, speaking anxiety.

This discovery highlights the significance of managing and reducing speaking anxiety in language learning environments to improve learners' speaking abilities. However, the study did not find a substantial impact of speaking anxiety on vocabulary retention, grammatical accuracy, or self-control. This suggests that while speaking anxiety can affect specific aspects of speaking proficiency, its influence may not extend uniformly to other language skills or student's self-control approach. The findings indicate that learners' capacity to choose and use vocabulary,



uphold grammatical correctness, and employ self-control learning methods may not be as directly affected by the student's level of communication anxiety.

This discovery highlights the significance of managing and reducing speaking anxiety in language learning environments to improve learners' speaking abilities. However, the study did not find a substantial impact of speaking anxiety on vocabulary retention, grammatical accuracy, or self-control. This suggests that while speaking anxiety can affect specific aspects of speaking proficiency, its influence may not extend uniformly to other language skills or student's self-control approach. The findings indicate that learners' capacity to choose and use vocabulary, uphold grammatical correctness, and employ self-control learning methods may not be as directly affected by the student's level of communication anxiety.

The present research employed a combination of methods to investigate the effects of AI-supported training on ESL learners' speaking abilities and speech self-control. The first analysis showed that students' language skills were greatly improved by AI-based training over non-AI approaches. These findings also discovered the beneficial impacts of AI on students' speaking abilities. It's possible that learners' engagement with AI in new and engaging ways enhanced their ability to talk. In essence, interacting with artificial intelligence (AI) in a virtual setting would have encouraged students to participate actively in interactions, leading to noticeable improvements in their speaking abilities.

AI-driven training provides learners with tailored and adaptable learning experiences, assessing their abilities in order to identify areas for development. Customised feedback and training resources are supplied, allowing learners to address unique language requirements and grow at their own pace, improving their speaking ability. In addition, AI-based training immerses students in significant linguistic input via collaborative exercises, virtual worlds, and AI-powered tutors. Participating in realistic speaking activities on such platforms leads students to accurate use of language, which is critical to acquiring fluency, vocabulary, and functional abilities required for effective oral communication.

Participants' speaking abilities and self-regulation have improved due to the possibility of performing collaborative speaking exercises with AI anytime, anywhere, and everywhere. Despite typical learning environments, students were not restricted by place or time, permitting learners to participate in collaborative speaking exercises at their own leisure. These results proved that AI's good function in enabling students to interact in various easily accessible places and at customizable timings. In addition, pupils could converse with AI since it created a relaxed atmosphere for interactive speaking tasks. Speaking nervousness frequently prevents students from engaging in collaborative discourse involving teachers and classmates.

## References

Bahrani, T., and Sim, T. S. (2012). Informal language learning setting: technology or social interaction?

Turk. Online J. Educ. Technol. 2, 10–17. doi: 10.7456/10203100/002.



Hamuddin, B. (2018). Blogs as powerful learning tools: the perception from EFL students in Riau Main island Indonesia. *IOP Conf. Ser. Earth Environ. Sci* 156:012060. doi: 10.1088/1755-1315/156/1/012060.

Hill, J., Ford, W. R., and Farreras, I. G. (2015). Real conversations with artificial intelligence: A comparison between human–human online conversations and human–chatbot conversations. *Comput. Hum. Behav.* 49, 245–250. doi: 10.1016/j.chb.2015.02.026.

Ganesh Dandu, G. Mohanacharyulu, (2023). "An impact of artificial intelligence tools on technical students'ESL oral communication skills: a study," *Proc. SPIE 12758, International Conference on Emerging Materials for Technological Applications (ICEMTA 2022)*, 1275808; <https://doi.org/10.1117/12.2686324>

Jia, F., Sun, D., Ma, Q., and Looi, C. K. (2022). Developing an AI-based learning system for L2 learners'authentic and ubiquitous learning in English language. *Sustainability* 14:15527. doi: 10.3390/su142315527.

Junaidi, J. (2020). Artificial intelligence in ESL context: rising students' speaking performance with Lyra virtual assistance. *Int. J. Adv. Sci. Technol. Rehabil.* 29, 6735–6741.

Kang, H. (2022). Effects of artificial intelligence and native speaker interlocutors on ESL learners' speaking ability and affective aspects. *Multimed. Assist. Lang. Learn.* 25, 9–43. doi: 10.15702/mall.2022.25.2.09.

Kim, Y. (2008). The contribution of collaborative and individual tasks to the acquisition of L2 vocabulary. *Mod. Lang. J.* 92, 114–130. doi: 10.1111/j.1540-4781.2008.00690.x.

Kim, J. (2018). Artificial intelligence and retention: The future of persistence in the age of narrow AI, or deep learning.