



Improving Communication Skills with Artificial Intelligence Chatbots and Virtual Assistants in the Digital Age

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Abstract: Artificial intelligence (AI)-powered chatbots and virtual assistants are increasingly used to support communication and language learning, yet concerns remain regarding overdependence, reduced human interaction, and responsible use. This study investigates students' use and perceptions of AI tools for communication-skill development through a Connectivist perspective and examines whether prior experience with such tools influences learning outcomes. An anonymous survey of 1,456 college and university students was conducted, of whom 1,276 reported using AI for academic purposes. The analysis considered motivations for AI adoption, including convenience, time constraints, lack of confidence, limited topic familiarity, alternative perspectives, and grade attainment, alongside instructional strategies for integrating AI into communication training. Analysis of variance showed no statistically significant differences in communication-skill outcomes associated with prior use of virtual assistants ($p = 0.209$) or chatbots ($p = 0.182$). These findings suggest that AI-supported learning can provide accessible opportunities for developing vocabulary, grammar, speaking, writing, and related soft skills regardless of previous exposure. However, effective implementation requires a balanced, human-centered approach that combines AI-enabled feedback and personalized practice with classroom interaction, critical thinking, and ethical safeguards. The study provides practical guidance for integrating AI tools into communication education while mitigating risks related to dependency, privacy, and bias.

Keywords: Artificial Intelligence, Chat Bots, Communication Skills, Educational Experts, Large Language Models, Students, Language.

1. Introduction

The recent advancements in AI have revolutionized the way people learn and improve their communication skills (Tai *et al.*, 2024). Chat bots and virtual assistants are interactive platforms that allow people to improve their language fluency, expression, and communication skills (Alafnan *et al.*, 2024). These AI-based platforms provide instant feedback, assistance with grammar and pronunciation, and facilitate effective conversations in different languages (Alsafari *et al.*, 2024). Chat bots provide an immersive learning experience by simulating human-like conversations, which helps build communication confidence and flexibility, making them valuable resources for learning and development (Thapliyal, & Thapliyal, 2024). In educational and business contexts, AI-powered virtual assistants help learners and employees improve their soft skills by providing personalised training and critical feedback (Lyu *et al.*, 2025). These programmes imitate real-world settings, allowing users to practice public speaking, negotiation, and customer service interactions (Yu *et al.*, 2024). Virtual assistants also improve collaboration by giving immediate assistance with email composition, presentation preparation, and professional talks (Zhou *et al.*, 2025). As AI evolves, these tools become more sophisticated, allowing people to develop effective communication tactics and overcome language hurdles (Gupta *et al.*, 2024). While chat bot and virtual assistant technologies have great benefits for improving communication skills, they also pose risks such as overreliance and the loss of human engagement (Yigci *et al.*, 2024). Users must achieve a balance between using AI to improve skills and participating in direct, one-on-one contact. The use of AI-powered technologies should supplement, rather than replace, traditional communication training, ensuring that individuals retain critical interpersonal skills (Singh *et al.*, 2025). With the ever-increasing impact of artificial intelligence on the digital world, the implementation of these technologies will enable people to successfully manage the emerging communication landscape (Hidayat-ur-Rehman *et al.*, 2024).



Connectivism serves as the theoretical framework in this study due to its emphasis on connecting learning as linking ideas, individuals, and technologies. The development of digital knowledge networks through chatbots and virtual assistants through AI allows for the interaction of learners with their learning material, receive instant feedback, and construct knowledge in an independent and autonomous way. The selected theoretical framework will be relevant to the study as it focuses on how students benefit from the usage of AI technologies to improve communication skills and balance human interactions. With regard to Connectivism and its principles, the research questions will address (1) student perceptions of chatbots and virtual assistants based on AI, (2) the difference in the results between instruction-oriented approach and autonomous approach to learning, and (3) most efficient language learning strategies through AI technologies.

One of the challenges of integrating AI tools like chat bots in the development of communication skills is the potential for overdependence, which could restrict physical interactions that are required for the development of emotional intelligence. Additionally, concerns regarding privacy, biases, and the need to establish ethical standards make it difficult to achieve a balance between the use of AI and traditional communication methods.

1.1 Literature Survey

Some research works presented in literatures were depend on enriching communication skills using selective technological tools; few of them were reviewed here, (Resabal *et al.*, 2024) investigated the use of chatbot-based learning to improve students' academic performance through a self-paced approach. Although the study reported positive outcomes using pre- and post-test results, its small sample size and reliance on purposive sampling limit the generalizability of the findings. In addition, the analysis was limited to descriptive statistics, which offered little empirical power. Although this study lends credence to the use of chatbots for personalized learning, it does not address the comparison of instruction-based and self-directed learning strategies, nor does it investigate communication skills and ethics.

(Sajja *et al.*, 2024) introduced an intelligent assistant powered by AI to facilitate adaptive and personalized learning in higher education. Although the system has the potential to increase learner engagement and alleviate cognitive load using AI and NLP, the study primarily concentrated on system design rather than learning and communication outcomes. Additionally, the study did not investigate aspects related to learner dependency and ethical concerns. The study emphasizes the importance of empirical research on adaptive AI systems and communication skills development.

(Guo *et al.*, 2024) have presented a chatbot-assisted discussion model in which students employed an argumentative chatbot to generate ideas prior to participating in group debates. Although the method was beneficial for critical thinking and collaborative discussions, the current study has a small sample size and focuses on qualitative analysis, which may affect generalization. Furthermore, the enhancement of communication skills was not quantitatively assessed and compared to the traditional discussion method.

(Roca *et al.*, 2024) have presented the integration of a chatbot into a course to support specific learning tasks and the evaluation of students' attitudes using the Technology Acceptance Model. Although the study indicates the importance of perceived usefulness and ease of use in influencing students' intentions to use chatbots, it was more focused on attitudes than actual learning outcomes or the development of communication skills. Furthermore, the study does not compare chatbot-supported learning with traditional teaching practices, nor does it examine the possible negative aspects of chatbot-supported learning, such as overdependence on technology and a lack of human interaction.

(Ait Baha *et al.*, 2024) have presented the application of educational chatbots in public schools in Morocco, comparing two experimental groups using chatbots and online content with a control group that received traditional education. The results show that chatbot-based learning can lead to increased engagement and more interactive learning experiences. However, the study had a small sample size and short-term evaluation, which reduces the generalizability of the results. Moreover, the study only assessed the effect on engagement and academic performance without considering the effect on communication skills and critical thinking.

(Duong *et al.*, 2024) have presented an AI voice chatbot for improving the English speaking abilities of Vietnamese undergraduate students over eight weeks. Although the study has shown positive results in terms of



pronunciation and speaking confidence, it has some limitations in terms of the small sample size (30 participants) and the short period of the study. Furthermore, the study has only measured the language performance of the participants and has not investigated the retention of the language skills or the comparison of the language skills with those of the traditional speaking practice.

(Zhang *et al.*, 2024) have presented an academic chatbot named KatzBot, which was driven by the proprietary Large Language Model named KatzGPT, with 6,280 pairs of sentence completion and 7,330 pairs of question and answer. Although the tool has the potential to improve academic communication, the current study was more concerned with the technical aspect and preparation of the dataset, without considering the effect of the tool on the learning outcomes of students. Furthermore, the use of the proprietary Large Language Model (LLM) makes it less transparent.

Despite the focus of the literature review on using chatbots and virtual assistants powered by AI for educational purposes in language education and customized learning processes, there are a number of significant issues that need to be addressed. First of all, most of the studies use small sample sizes or purposive sampling techniques. This limits the external validity of the findings. Additionally, most of the research is focused on system design, learner engagement, or attitudes rather than on communication skill development itself. Overdependence on AI, decreased human interaction, and ethical issues such as privacy, bias, and responsible use of AI are yet to be investigated. The empirical evidence supporting the use of AI-assisted learning to improve overall communication skills, critical thinking, and soft skills is also meager. The current study aims to investigate AI-based chatbots and virtual assistants in a systematic manner, comparing instruction-based and self-directed methods, and analyzing their effectiveness on communication skills.

To fill these gaps, this research combines AI-driven chatbots and virtual assistants with conventional teaching practices based on the Connectivism model, enabling students to access online learning networks while retaining basic human skills. With a large sample size ($n = 1456$) and inferential statistical analysis, this research not only focuses on language skills, vocabulary, grammar, speaking, and writing but also on communication skills, critical thinking, and soft skills. It also takes into account the ethical concerns of AI dependence, less human interaction, privacy, and bias. By comparing instruction-based and self-directed learning, it offers empirical proof of the effectiveness of AI tools in improving communication skills while promoting ethical and human-centered learning.

Major Contribution of this paper includes.

1. The research examines student attitudes towards AI tools and compares the efficacy of instruction-based and self-directed learning approaches in building communication skills.
2. It investigates alternative techniques of language acquisition utilising AI-powered tools, providing insights into how technology might improve the learning experience.
3. The analysis emphasises the use of AI to build both technical and soft skills, particularly communication, which is crucial in the AI-driven world.
4. It adds to the discourse about AI ethics by proposing frameworks for ensuring the ethical integration of AI tools into educational processes, addressing issues such as data privacy and bias.

Remaining manuscripts arranged as below: section 2 displays methodology, section 3 displays developing communication skills in the AI era, section 4 depicts conclusion.

2. Methodology

The primary objective of the proposed methodology is to analyze the attitude of students towards these technologies, compare the learning outcomes of instruction-based learning and self-directed learning methods, and identify the various learning methods of language learning using technical tools. The learning outcomes of instruction-based and self-directed learning methods are analyzed to determine their effectiveness on language skills. The approach is Connectivist because it allows students to interact with AI technology in autonomous learning spaces where they can build knowledge networks, examine diverse views, and get immediate feedback to shape their own understanding. Moreover, the approach to identify and analyzing many methods of learning languages by using



technical tools, and determining which tools or sets of tools are more efficient in developing key language skills like vocabulary, grammar, and speaking. This approach provides valuable information regarding the application of technology in language learning.

2.1 Why do Students use AI Apps for Task Completion

AI apps offer quick solutions for students' most common needs. AI apps can answer questions accurately without relying on search engines with billions of outcomes. Most likely, the answers are right. AI apps produce articles based on predefined criteria and word restrictions. Experienced composition examiners gave these AI-generated essays an 89% score. AI apps can answer theoretical communication questions with 98% accuracy, as reported by qualified educators. AI programmes can analyse case studies, with an average score of 85% from professional communication instructors. Questions about business writing, both theoretical and practical, can be answered by AI apps. Answers from reputable business writing instructors were 95% and 76%, respectively. AI applications can enhance students' composition, business writing, and communication abilities, which will improve test scores. The findings are unique and derived from plagiarism detection software. Why would students choose to adopt AI applications?

To answer this question, college and university students participated in an anonymous online survey. Three questions were asked in the response: (1) Are you a college or university student right now? (2) Do you study using artificial intelligence? Students were asked to justify their use of AI in their studies if the response was in the affirmative. Pupils could vote on a previous respondent's response or submit a new response. In three months, 1456 people responded to the survey. 1276 of the 1456 students said they use AI for the reasons listed below (Table 1).

AI is used by students for both academic and general purposes, as indicated by their responses to the questions. Convenience (50.37%), lack of interest or curiosity (10.71%), and time constraints (84.92%) are the main excuses for not finishing tasks. Some of the reasons why students use AI apps in the classroom include: a lack of basic skills (17.92%), inadequate understanding of the topic (46.53%), a lack of confidence in one's own abilities (75.88%), a desire to get good grades (51.83%), and a desire to present an alternative viewpoint (98.57%). Academically, using AI programmes to complete assignments is considered cheating. Students are engaging in the same practice as copying assessments from other students or plagiarizing from outside sources when they submit AI-generated evaluations and responses and claim that they were created or written by them. Additionally, it is comparable to the custom of having someone else write the response for them. Students assert ownership of an answer or contribution that is not theirs in each of these instances. The following sections cover the motivations for employing AI programmes to generate assessments, both academic and general.

Table 1. Reasons for utilizing AI and large language models (LLM) apps among college and university students

Reason for use	No. and % of Respondents
Convenience	639(50.37%)
Lack of time	956(84.92%)
Lack of expertise or familiarity with the topic	591(46.53%)
Lack of faith in their own skills	969(75.88%)
Absence of interest in the topic or curiosity	123(10.71%)
Absence of fundamental abilities to complete tasks	206(17.92%)
Provide a different perspective	1254(98.57%)
Desire to achieve a high grade	629(51.83%)

2.1.1 General Reasons for Using AI Apps

Convenience, time constraints, and a lack of interest or curiosity are the four main reasons why students utilize AI apps and chat bots. In order to prepare for job-related responsibilities, students attend universities and



colleges to acquire knowledge and skills in a variety of subjects. College may be seen by some students as a necessary step toward the next stage of their lives. Time constraints may make it difficult for students to attend classes, finish assignments, and take tests. AI is being used by students more and more to complete assignments and create tests. Students use AI apps for the following three primary reasons:

1. Convenience: AI chat bots provide a more efficient option for students by offering immediate, direct answers and creating complete responses to academic activities. This decreases the possibility of plagiarism and allows students to complete assignments more rapidly.
2. Lack of time: Students with tight timetables or last-minute deadlines frequently use AI tools to finish projects efficiently. With various course deadlines, AI can help students' complete requirements without feeling overwhelmed because it saves time compared to manual effort.
3. Lack of curiosity/interest: Students who are enrolled in dull or required courses may lack motivation to engage deeply. AI apps let students complete homework fast without developing genuine curiosity or enthusiasm in the subject, indicating a detachment from learning.

Apart from inadequate time management, decision-making, prioritization, multitasking, stress management, and work ethic, the aforementioned attitude also implies a lack of maturity and seriousness in academic assignments. As students strive for personal, societal, and behavioural freedom, they become increasingly reliant on artificial intelligence. AI computers can hijack people's brains and prevent them from creating their own ideas. Students and teachers should collaborate to alter perceptions and create a comprehensive approach to learning and professional development in order to address this attitude or behavior.

2.1.2 Academic Reasons for Using AI Apps

Students may use AI apps for five different reasons, according to academic research. The following are the five reasons: (1) a lack of basic skills to complete tasks; (2) an unfamiliarity or ignorance of the topic; (3) a lack of confidence in one's abilities; (4) a desire for high grades; and (5) a unique point of view. Based on these five factors, it appears that both students and lecturers bear responsibility for their usage of AI systems to generate responses.

1. Lack of familiarity/knowledge: Students who lack knowledge of concepts may turn to research, tutoring, or AI software to complete assignments. Teachers can help students become more familiar with concepts through hands-on activities, examples, and engaging discussions, reducing the reliance on AI software.
2. Lack of basic skills: Most students lack the necessary skills required to carry out basic tasks, hence their dependence on AI systems. Learning institutions should therefore focus on developing these basic skills to enable students to be more independent and reduce their dependence on artificial intelligence.
3. Lack of confidence: Students who lack confidence may turn to AI tools for help. Building confidence in students through encouragement and providing a safe learning environment can help students trust their abilities and minimize their reliance on external tools.
4. Eagerness to score high grades: Students who prioritise grades over learning may employ AI techniques to improve their GPA. Instructors can redirect students' attention from grades to learning outcomes, pushing them to work on mastering the content, which also automatically leads to higher grades.
5. Provide a different perspective: When students are stuck, they may turn to AI to develop fresh ideas, which might lead to overreliance. Instructors can lead brainstorming sessions and conversations to promote autonomous thought and idea generation, eliminating the requirement for AI-generated content.

Here are five academic reasons why students should use AI tools. The conversation emphasises the duty of both students and instructors to reduce reliance on AI tools and promote self-reliance and confidence.

2.2 Using AI Resources in the Classroom

ChatGPT has received mixed feedback from users after testing large language models (LLMs) for several months. A very useful AI tool for the general public is ChatGPT. Use of ChatGPT might affect the market for



knowledge-based products. Because users can use Chat GPT to generate automated responses that could influence a decision, the technology may have an effect on decision-making, contends that democracy might suffer as a result. AI-generated content is now recognized by Turnitin. In order to identify content generated by artificial intelligence, they have been developing an AI-powered solution lab for years. The researchers trained their algorithm on scholarly text collected from a large database, rather than using publicly available data alone. Turnitin is more effective for identifying plagiarism in student work. Plagiarism detection is emerging more quickly than AI writing tools. Turnitin should leverage AI writing tools, including ChatGPT, to recognise content. Today's students were born into the digital age. Students' dependence on technology and smart devices prompted a discussion several years ago about the significance of integrating technology into education. The arguments are different but similar today. Using AI tools exclusively can lead to problems. Teachers can do the following to incorporate AI tools into our lessons (Table 2). Instructors should keep in mind that the purpose of incorporating AI technologies into the classroom is to improve learning, not to replace human interaction. To maximise the benefits of AI, instructors should mix it with excellent teaching approaches.

Table 2. Using AI in the classroom

Strategies	Methods of application
initiate AI tools to students	The purpose of using AI tools in the classroom and its advantages must first be explained to students by their instructors. Teachers may offer seminars to help students gain confidence in using AI tools.
Activities and Plan lessons	Instructors need to develop lesson plans that make good use of AI tools. These technologies should be carefully incorporated by educators into their lesson plans and instructional strategies. Instructors must inform students that these tools are for practice purposes only, not for exam answers.
Assess learning needs	Instructors need to determine how using AI tools can enhance their students' learning experiences. They take the difficulties into account as well. Instructors use AI tools to target the needs of their students as soon as a decision is made..
Select appropriate tool	Instructors take many techniques to teaching. Before integrating AI into education, educators must ensure that the tools correspond with their curriculum and teaching style. Platforms that are currently accessible include virtual reality, data analysis, adaptive learning, language processing, and collaborative learning.
Hands-on activities	For students to use AI tools effectively, teachers must create interactive exercises that demand interaction. This category may include tasks involving case analysis, business writing, research projects, problem-solving, and creative assignments. Artificial intelligence tools being used only to give students harmful answers.
Assessment and feedback	Both formative and summative evaluations can benefit from the application of AI techniques. These tools can monitor children's growth and development. This would enable teachers to comment and share with students.
Reflect and adjust	Instructors must keep in mind the importance of reflecting and adapting as they incorporate AI tools into their lessons.
Ethical considerations	The moral ramifications of using AI, such as bias, algorithmic decision-making, and data privacy, should be covered by instructors.

3. Building Soft Skills in Communication in the AI Era

Effective communication abilities are highly valued in today's job market. Effective communication with co-workers, partners, collaborators, and customers is a requirement set by employers. According to research, having strong communication skills increases productivity, conflict resolution, teamwork, innovation, and creativity. They can create visual assistance by highlighting essential points and thoughts. Students can use AI techniques to make



films or images. When it comes to media production or modeling, AI can complete the task rather quickly. Since the material in these visual and verbal communication courses is delivered either orally through speeches or graphically through pictures and/or videos, copying and originality are typically not a problem.

Instructors, professors, and teachers should emphasize the significance of soft skills for students' future employment and actively support their development in communication classes. By employing the comparison and contrast method, educators can emphasize the significance of soft skills in communication for their students' social, academic, and professional growth. Teachers ought to demonstrate to their students the possible consequences of failing to acquire these skills prior to graduation. To support the comparison and contrast process, persuasive strategies such as ethos, pathos, and logos could be used. As a convincing strategy, it is going to use instances to demonstrate the difference between graduates with and without excellent communication abilities. References to reputable people, forums, and organizations, along with statistics, can highlight the importance. Pupils need to comprehend the rationale behind learning a concept or skill. Students are more motivated to finish assignments when they are given information and understanding. Instructors can employ the following tactics (Table 3) to effectively develop these skills throughout class.

Table 3. Strategies for Building Soft Skills in Communication in the AI Era

Strategies	Detailed techniques
Classroom discussions and debates	- Plan frequent class debates and discussions on relevant topics. This allows children to listen to others, express themselves, and have constructive conversations. - Assign roles and outlooks to students in order to cultivate critical thinking and empathy.
Written communication practice	- Assign writing tasks that require concise and understandable language. This could comprise summaries, reports, or essays. - provide guidelines for good grammar, formatting, and organisation.
Active listening skills	- Teach and demonstrate active listening practices, such as upholding eye contact, asking clarifying questions and nodding. - To demonstrate understanding, encourage students to summarize or paraphrase what their peers have said.
Feedback and reflection	- Regularly give feedback on communication, both written and verbal. Determine your strengths and suggest areas for enhancement. - Motivate students to evaluate and consider their communication abilities, establishing objectives for enhancement.
Role-playing and simulations	- To get students ready for real-world communication situations, includes Use simulations or role-playing games during negotiations or interviews. - Assign students specific communication challenges to overcome.
Guest speakers and networking	- Ask speakers with a variety of backgrounds to share their perspectives and experiences. Students are exposed to a range of communication scenarios and methods as a result. - Offer networking opportunities for students to engage with professionals and develop their communication abilities.
Create a supportive environment.	- Establish a classroom climate that is welcoming, polite, and open so that students can express themselves without worrying about criticism. - Promote active participation by honoring and valuing each student's input.
Public speaking opportunities	- Give students the chance to give speeches or presentations. This boosts confidence, helps organise ideas, and improves public speaking skills. - Provide helpful feedback to help them enhance their presentation and content.
Use of technology and multimedia	- Use multimedia such as podcasts, movies, or online debates to introduce students to various modes of expression and communication. - Instruct them on how to react to and critically assess multimedia content.



Group projects and collaboration	- Assign group projects that call for communication between students, communicate, and efficiently allocate duties. - Stress the value of clear delegation, active listening, and group conflict resolution.
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These strategies align with AlAfnan's taxonomy, which emphasises the integration of AI technology in learning. AI tools will be incorporated and introduced by instructors in communication courses. There are several stages involved in integrating AI tools into communication courses for the best results. Teachers can introduce AI technologies for improving communication, highlighting how they can improve interpersonal, speaking, writing, and listening skills. Examples of case studies on how AI tools improve learning and communication skills can also be included in this introduction. Educators can then use assignments or exercises where students can use AI tools. Students can use AI tools to improve grammar and pronunciation skills, and working on projects can be done using virtual communication platforms. These examples show how AI tools can be used to improve communication skills in students. Educators can then use discussions on the negative aspects and ethics of AI tools in communication. This can help with privacy concerns, biases in AI tools, and critical thinking when using AI tools for communication. To ensure that students are utilizing AI tools in the most effective manner, teachers can then offer guidance and support throughout the course. Offering guidance, technical support, and feedback on the application of AI technology by students could all be included in this.

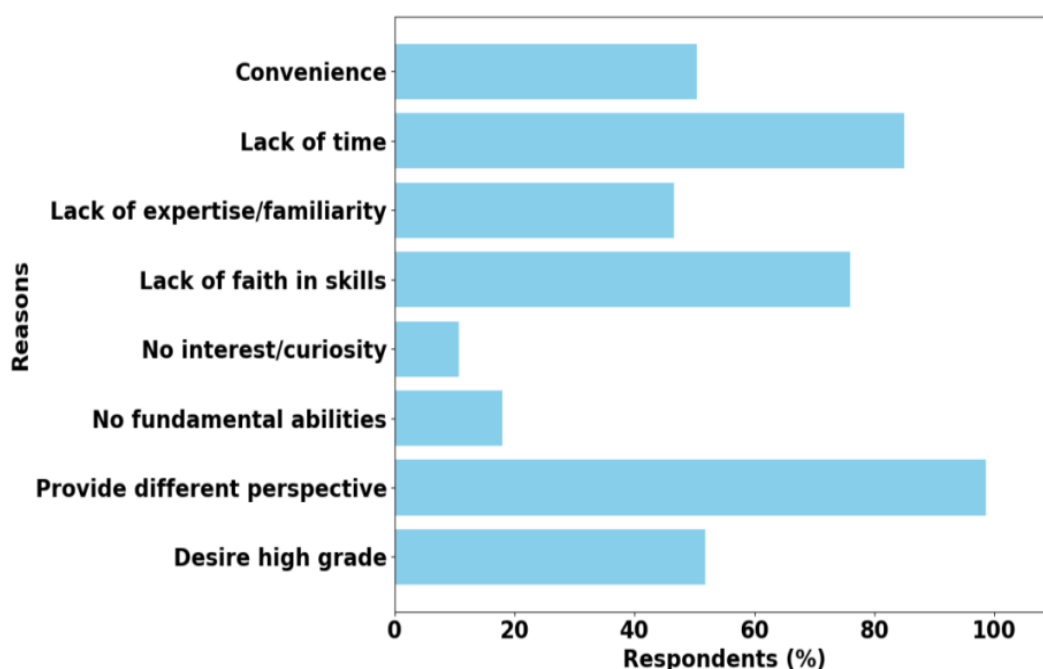


Figure 1. Factors influencing the use of AI chatbots and virtual assistants.

The horizontal bar chart in Figure 1 highlights the key factors that influence students to use AI chatbots and virtual assistants. The chart indicates that convenience, efficiency, and the ability to provide new perspectives are the key factors, while a lack of interest or basic skills has less influence. This highlights that students use AI tools for learning purposes.

AI systems can help students enhance their communication skills through different means. AI-powered language learning software helps students enhance grammar and vocabulary skills through speech analysis and interactive exercises. Virtual reality simulation helps students with personalized feedback to enable them to perform better in speaking and listening. Students can analyze their communication style by using text-to-speech and speech-to-text software, which helps improve articulation and speech clarity. Artificial intelligence (AI) chat bots and virtual assistants help students enhance text communication skills, and feedback systems evaluate performance measures and areas that need improvement. AI-powered collaborative tools help students have group discussions remotely, translate simultaneously, and communicate better in different languages. Emotion recognition software in communication tools, which analyzes verbal and facial expressions, helps students enhance empathy and communication skills, thereby enabling them to understand and express their emotions better. AI solutions help



students have personalized learning, quick feedback, and plenty of opportunities to practice, enabling them to develop the soft skills needed to communicate effectively in different situations. It is essential for educators to understand that it takes time and effort to develop communication skills. Educators should be empathetic and provide students with opportunities to develop and appreciate their achievements.

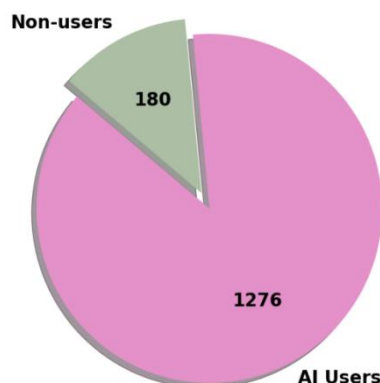


Figure 2. Distribution of AI tool usage among students.

Figure 2 show that a majority of students actively use AI chatbots and virtual assistants to support their learning, while a smaller group does not engage with these tools. This demonstrates the growing reliance on AI for enhancing communication, completing academic tasks efficiently, and exploring alternative perspectives, reflecting the increasing integration of AI into modern educational practices.

To evaluate the effect of prior experience with virtual assistants and chatbots on communication skill development, an ANOVA test was conducted. The results are interpreted based on standard significance criteria as follows:

1. **Significant ($p < 0.05$):** Indicates that AI tools have a meaningful effect on improving communication skills.
2. **Not significant ($p > 0.05$):** Indicates that prior experience does not influence the learning outcomes, showing equal effectiveness across all learners.

Table 4. ANOVA Test for Effect Attributes of AI Chatbots and Virtual Assistants

Attribute	Source of Variation	Sum of Squares	df	Mean Square	F	Sig. (P)
Virtual Assistant	Between Groups	9.615	3	3.205	1.517	0.209
	Within Groups	3060.711	1452	2.108		
	Total	3070.326	1455			
Chatbot	Between Groups	10.284	3	3.428	1.625	0.182
	Within Groups	3059.042	1452	2.107		
	Total	3070.326	1455			

ANOVA test results concerning the influence of previous use of virtual assistants and chatbots on the development of communication skills are provided in Table 4. As demonstrated by the ANOVA analysis, significance levels for the use of virtual assistants (0.209) and chatbots (0.182) were above 0.05, which means that the results are not statistically significant. It implies that there is no difference in communication results between subjects depending on their previous use of AI tools. The efficiency of AI-assisted training is universal.

4. Discussion

These results imply that AI-supported chatbots and virtual assistants can contribute to communication skills' development in terms of vocabulary, grammar, speaking, and writing. The ANOVA results provided in Table 4 demonstrate that there is no statistically significant difference between these outcomes due to AI support in the learning process ($p > 0.05$). It implies that outcomes achieved within SAL with AI are similar in different student



cohorts regardless of their previous experience with AI in learning. It corresponds to other empirical research. For instance, the study by (Resabal *et al.*, 2024) states that SAL with chatbots contributes to higher academic performance, while the study by (Duong *et al.*, 2024) shows that AI voice chatbots positively affect learners' speaking skills development in English. In addition, (Sajja *et al.*, 2024) argue that adaptive learning with AI support is less cognitively loaded and involves more active participation. This finding correlates with high rates of usage reported in this study. The current research used a considerable number of participants ($n=1456$) and inferential statistics to obtain empirical evidence regarding the effect of AI tools on communication skill acquisition when compared to other previous studies that employed smaller sample sizes or descriptive statistics. Moreover, the distinction between the two learning modes shows that self-directed AI learning is less dependent on instructors, allowing for more personalized and autonomous learning, which is consistent with connectivist learning principles, while instruction-based learning tends to be more systematic and standardized. The results corroborate the initial hypothesis that AI tools enable students to make connections, conduct independent communications, and embed knowledge in digital media. Overall, the current study demonstrates that AI tools have potential value in developing communication skills, but they should be supplemented with human-centered learning methods. The study also shows that previous exposure to AI tools does not affect learning outcomes.

5. Conclusion

This study examined the role of AI-powered chatbots and virtual assistants in supporting the development of communication skills among students, particularly in vocabulary, grammar, speaking, and writing. The results show that the use of such tools based on artificial intelligence is linked to positive learning experiences and that they offer learners a constant support in the development of communication skills. The inferential statistical analysis, however, revealed that there were no statistically significant differences in the communication skill outcomes between all the study groups with the different prior experiences ($p > 0.05$), indicating that there was no difference in the effectiveness of the AI-supported learning irrespective of the prior experience. The research does not claim that there is a statistically significant improvement due to group differences in prior experience, but does show that AI tools have a positive impact on learning by providing interactive practice, feedback, and engagement opportunities. The findings underscore the versatility and inclusiveness of AI-aided learning in communication skills training. The study supports the integration of AI tools within human-centered teaching frameworks, where technology acts as a supportive aid alongside traditional instruction to enhance student engagement and communication learning outcomes.

5.1 Practical Implications

From the findings, the implication is that instructors can employ the use of applications involving AI-powered chatbots and virtual assistants as new means of offering personalized practice, instant feedback, and flexible learning beyond the confines of the classroom setting. Learning institutions can take advantage of AI-powered systems for scaling communication and language training while at the same time maintaining instructional control in order to ensure that interpersonal skills continue to develop. As far as developers of AI is concerned, the implication is that there is a need to create tools that facilitate guided learning and ethical interaction.

5.2 Limitations

However, there are also several limitations associated with this study. First, this study was conducted in the context of higher education; therefore, the results obtained might be not applicable to other educational levels and cultural backgrounds. Second, this study did not address the issue of whether the communication skills learned through the training were retained over time and applied to new contexts. The self-reporting data could be influenced by respondents' biases despite the inferential statistical method used in the analysis. Third, the study was concentrated only on academic communication skills.



5.3 Future Research Directions

Further research must make use of longitudinal methods in order to examine the consequences of AI-assisted learning with regards to communication skills and workplace preparedness. The external validity of research can be enhanced by performing research in different fields of study, as well as different cultures. Higher-order communication skills such as those related to critical discourse, persuasion, and collaboration must be studied in greater depth. Ethical considerations include those pertaining to data privacy, bias, and learner dependency in AI-assisted learning environments.

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