
Using Artificial Intelligence (Chatbots) to Develop English majors' Communication Skills

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Abstract

The present study aims at investigating the effect of using Artificial Intelligence (Chatbot) in developing communication skills of English majors. The pre-post design was used in the current study. The study participants consisted of 60 students in third year, English language department at Minia Higher Institute of Languages. They were divided into the control group (n= 30) and the experimental group (n= 30). The participants of the experimental group received English communication skills instruction through the proposed chatbot which was developed by the researcher, whereas the participants of the control group received regular instruction. The instruments used in the present study consisted of a questionnaire and a performance test. The results of the present study showed that the experimental group scored higher marks in the post test compared to the control group. Also, the results of the study showed that using Artificial Intelligence (chatbot) enhanced English majors' communication skills. The study recommended using Artificial Intelligence "chatbot" to improve students' English communication skills and adopting the Artificial Intelligence "chatbot" for enhancing other language skills.

Key words: Artificial Intelligence (AI), Chatbot, Communication Skills

استخدام الذكاء الإصطناعي (برامج الدردشة بواسطة الذكاء الإصطناعي) فى تنمية مهارات الإتصال لدى طلاب قسم اللغة الإنجليزية

مستخلص الدراسة باللغة الإنجليزية

تهدف الدراسة الحالية إلى تطوير مهارات التواصل باللغة الإنجليزية لدى طلاب قسم اللغة الإنجليزية و ذلك من خلال استخدام الذكاء الإصطناعي (برامج الدردشة من خلال تطبيقات الذكاء الإصطناعي). طبقت الدراسة الحالية المنهج شبه التجريبي المعتمد على الإختبار القبلى و البعدى، حيث اشتملت عينة الدراسة على (٦٠) طالب و طالبة من طلاب الفرقة الثالثة بقسم اللغة الإنجليزية، معهد المنيا العالى للغات، و تم توزيعهم بالتكافؤ بين المجموعة التجريبية (العدد = ٣٠) و المجموعة الضابطة (العدد = ٣٠). حيث تلقى المشاركون بالمجموعة التجريبية شرحا و تطبيقا لمهارات التواصل باللغة الانجليزية من خلال برنامج الدراسة المقترح القائم على الذكاء الإصطناعي و الذى قام الباحث بتصميمه لغرض الدراسة الحالية، بينما تلقى المشاركون بالمجموعة الضابطة شرحا و تطبيقا بالطرق العادية. اشتملت أدوات الدراسة على استبيان و إختبار قبلى/ بعدى لمهارات التواصل باللغة الإنجليزية. و أوضحت نتائج الدراسة أن هناك فرق ذو دلالة إحصائية (لصالح المجموعة التجريبية) بين متوسطى درجات المجموعة التجريبية ودرجات المجموعة الضابطة فى التطبيق البعدى لإختبار قياس مهارات التواصل باللغة الانجليزية. و أيضا كل مهارة على حدا مما يثبت فاعلية تطبيقات الذكاء الإصطناعي فى تطوير مهارات التواصل باللغة الإنجليزية. و اشتملت توصيات الدراسة على استخدام تطبيقات الذكاء الإصطناعي فى تحسين مهارات التواصل باللغة الإنجليزية و كذلك تطبيق تلك التقنيات فى تحسين باقى مهارات اللغة الإنجليزية.

Introduction

Artificial Intelligence (AI) is a modern technology that emerged with the emergence of computers, and then it has brought artificial intelligence-supported (AI) chatbots to its users, that attracted users, educators and learners worldwide to language models called generative artificial intelligence which gained greater popularity. Chatbots are used in many fields and they are called 'conversational agents', 'conversational tutors', or they are simply called 'bots' (Perez et al., 2020). With the development of Artificial Intelligence (AI), the chatbots are developed to be used in a number of fields, including, marketing, customer service, technical support and education (Smutny & Schreiberova, 2020). AI became an attractive tool for learning and using its applications for personal learning as the new and attractive features of AI extend beyond the learning environment. Artificial Intelligence Chatbots are intelligent systems which are used in the field of education because of their benefits, including collaboration, increasing engagement of students, and accessibility. Also, these tools may result in a number of new issues, especially what is related to scientific integrity and academic plagiarism (Cotton et al., 2023). However, there are many AI chatbots which are used for learning and training, so they can be used for the purpose of supporting a number of learning outcomes. There are many AI chatbots which are being developed with different techniques, while, the first version of ChatGPT, emerged with the first-generation generative pre-trained transducer (GPT) language model, that is an early evolution of Natural Language Processing (NLP) algorithms (Zhang & Li, 2021).

Adopting AI chatbots in education has many advantages such as personalized learning, quick access to information, instant feedback. However, students' digital literacy skills should be developed to effectively integrate AI chatbots into learning processes (Farrokhnia et al., 2023). Also, AI chatbots can be used for analyzing and evaluating students' learning abilities (Durall & Kapros, 2020). According to Bozkurt, (2023), considering the effectiveness of AI chatbots, it is resulted from those tools understanding of the text and producing human-like text. Those tools capability of comprehension depends on the data and algorithms they contain. As AI chatbots are generative AI technologies, they can enhance teaching and learning processes and methods in an unconventional way and require educators to develop new ways of thinking and keep up with the transformation, it is emphasized that the potential benefits of the technology should be used carefully and cautiously.

While there is much debate about using AI chatbots in the fields of teaching and learning, there are international organizations which are closely following developments in this field. For example, in 2023, UNESCO developed a quick guide to AI applications in higher education with a specific focus on ChatGPT (Sabzalieva & Valentini, 2023). The UNESCO organization has also published a research report that includes ethical values as a guideline for AI curricula in the K12 learning category, with a special focus on ChatGPT (UNESCO, 2022). Rospigliosi (2023) states that ChatGPT encourages follow-up questions through a continuous dialog, providing a different experience from search engines. Search engines do not store the evolving history of the answer, they just list it. ChatGPT responds to the challenges posed by the questioner by providing follow-up questions that develop and expand the answers. The GPT-3 model is a language model that uses deep learning to produce human-like text. Ziang (2020) states that chatbots engage users in a text-based conversation to draw out their views and opinions. But there is a challenge to develop effective interview chatbots that can handle user free-text responses to open-ended questions and deliver engaging user experience. Firstly, the feasibility and effectiveness of using publicly available, practical AI technologies should be investigated to build effective interview chatbots.

According to Smutny & Schreiberova (2020), interest in the use of AI chatbots for teaching and learning purposes is increasing greatly. When the literature is examined, it is noticed that AI chatbots are used at many fields such as technology (Tang et al., 2023), health (Sapçı & Sapçı, 2020), mathematics (Hwang & Tu, 2021), and educational sciences (Zawacki-Richter et al., 2019). Systematic literature reviews in the field of educational sciences include the use of AI in language education (Liang et al., 2023), artificial intelligence in teacher education (Salas-Pilco et al., 2020), trends in AI-supported e-learning (Tang et al., 2023), and the use of artificial intelligence for assessment (González-Calatayud et al., 2021)

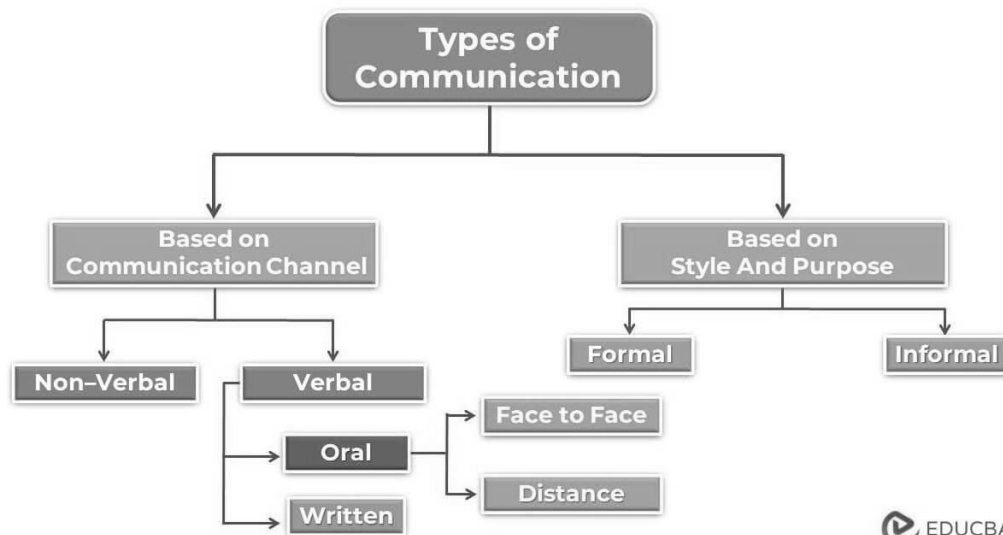
Communication skills:

Communication skills refer to the abilities you use when you give or receive different kinds of information, including communicating ideas, feelings or even an update on your project. Those skills involve speaking, listening, observing and empathizing. Also, there are differences in how to communicate whether through face-to-face interactions, telephone conversations or digital communications including emails and social media.

They are the skills which allow you to understand and be understood by other people, which include communicating ideas effectively to other people, listening actively in conversations, giving and receiving critical feedback and public speaking.

There are different methods of communication, include:

- Verbal communication.
- Non-verbal communication.
- Written communication.
- Listening.
- Visual communication.



The way of communication depends on who you are communicating with, and the purpose of this communication. Different communication methods are suited to different situations and you can decide which is most appropriate for conveying your message and communicating most effectively. There are several different ways individuals communicate with each other. Each one can be important in different ways and they are often used together. For example, non-verbal communication is used alongside verbal communication with the use of facial expressions, body language, hand gestures and head nodding.

Verbal communication can be used in a variety of ways. This includes communicating on a one-to-one basis or in a group setting. Verbal communication can take place in person, over the telephone, by video conference or voice message. Verbal communication is also used on television, social media and news outlets.

Written communication can be useful in a variety of ways both in a formal and informal setting. This can include letters, legal documents, reports, emails and social media.

Methods of communication will change depending upon the people who are communicating with each other and the context of that communication. For example, an email between two professional people would sound different compared to an email between two friends, as the formality and tone would differ. Communication methods may also change depending upon the understanding of the subject matter by the person receiving the message. For example, if there was a training course for beginners, the language would not be as complex and more visual aids may be used.

Verbal communication: It refers to communicating using words. This includes sounds, words, language and speaking. Speaking is an effective way of communicating: it is classified into interpersonal communication and public speaking (Aarti, 2011). Interpersonal communication occurs when one person speaks directly to another. Here, communication would be informal: one can say what one really feels, though this is bound by the social norms guiding the sender and the receiver. Public speaking occurs when one person speaks to a large group. In this case, communication is formal; rule bound and centred more on the speaker getting some kind of result. In all of these, speakers may want to entertain, inform, persuade or argue. Verbal communication can also be referred to as oral or spoken. It can make use of visual aids and non-verbal elements to facilitate meaning and enhance rapport and achieve high level of understanding by removing ambiguity and garnering immediate feedback. Verbal communication is when we use the spoken word to communicate with others. This can be face to face with another person or group of people, or over the telephone or video call, for example Skype or Zoom. Face-to-face verbal communication is usually the preferred method of communication; however, it is not always realistic due to time constraints or the location of people.

During the Covid-19 pandemic people have had to adapt in the way they communicate, and a lot of verbal communication has moved online via video calls and video conferences. Verbal communication can be informal, for example casually chatting with a friend, or it can be a more formal process such as a work meeting, interview, conferences, lectures or oral presentation. How effective the oral communication is will depend upon the

receptiveness of the receiver, speed, volume and pitch of the words and clarity of speech.

Non-verbal communication: According to (Daniel, 2016) Non-verbal communication refers to the process of conveying meaning through non-word messages. It is related with messages, information and ideas we convey without words; that is through the use of physical communication including tone of voice, body motion, etc. it also includes symbols and sign language, because facial expressions, body language or physical contact convey a lot of information. Sign language is a good example of non-verbal communication as it can be used by anyone at any time. A non-verbal sign such as bell ringing is a common sign you and I understand. By itself, ringing of a bell means nothing. However, in recognized contexts, it may mean “time for school”, “change of lesson”, “is somebody at home”, “end of lesson”, or “second hand goods for sale.” Non-verbal communication helps you get a sense of how others are feeling and what they may be thinking. Physical non-verbal communication includes eye contact, facial expressions, body posture, and movements of body in addition to the tone of voice. They help to convey a message to the person or people when you are communicating with.

Written communication: Written communication refers to communication with other people through written speech. The ways of using written communication may include reports, articles, Email and text messages, both for business and personal purposes. The advantages of written communication include editing and amending the text many times before sending it finally to the recipient. Historically, written communication first emerged through the use of pictograms, which were made on stone (Yule,2010). Later, writing began to appear on paper, papyrus, clay and wax. Now, communication is carried on by the transfer of information through controlled waves and electronic signals. The effectiveness of the written communication depends on writing style, vocabulary selected, grammar used, and text clarity.

Visual communication: According to Aarti (2011) it is a visual display of information such as topography, photography, signs, traffic codes, symbols and designs. Television and video clips are the electronic form of visual communication.

According to Daniel (2016) Intra-personal communication is a level of communication that is general to all types of communication. It is the

language use or thought that is internal to the communicator. In addition, when you daydream or pep-talk yourself, these can also be classified as intra-personal communication.

Pedagogical Implications of Integrating AI in Language Learning:

The integration of AI in language learning has significant pedagogical implications. Research by Zheng and Xing (2020) investigated the pedagogical benefits of an AI-powered adaptive learning system. The Role of Artificial Intelligence (AI) In Developing English Language Learner's Communication Skills, and found that it effectively personalized language instruction to meet learners' individual needs. The study emphasized the importance of adaptive assessments and personalized feedback in promoting learners' progress and engagement. Additionally, Zhang et al. (2019) explored the role of AI-based chatbots in language learning and highlighted their ability to provide immediate and interactive language practice opportunities. Learners reported increased motivation and engagement when interacting with chatbots, which facilitated natural language conversations and offered personalized feedback. These findings underscore the pedagogical value of AI technologies in promoting learner autonomy and creating tailored learning experiences.

Previous research has shown the positive impact of AI in enhancing English language learners' communication skills. A study by Li et al. (2020) investigated the effectiveness of an AI-powered speech recognition system in improving learners' pronunciation and found that learners who received feedback from the system showed significant improvements compared to those who did not. This finding aligns with the study conducted by Chen et al. (2018), which demonstrated that the use of AI-based virtual tutors improved learners' speaking fluency and accuracy. Similarly, Wang and Liu (2019) explored the effectiveness of an AI-driven language learning application in developing learners' oral proficiency. Their findings revealed that learners who used the application exhibited enhanced speaking skills and greater confidence in real-life communication situations. These studies collectively supported the notion that AI technologies, such as speech recognition systems and virtual tutors, had a positive impact on developing English language learners' speaking skills.

Results of Chui's study (2005) agreed with the present study as it pointed out that communication, when pedagogically employed, can lead to better classroom interaction and creative learning .this can also improve and build up students confidence and facilitate their writing skills in literacy classroom.

The study of Sang (2010) concluded that student teachers should be prepared to integrate information and communication technology (ICT) into their future teaching and learning practices. Results of that study show that prospective ICT integration significantly correlates with language teaching and learning competence.

Context of the Problem:

Having interviewed some English majors from Minia Higher Institute for languages and examining their scores in the subject of communication skills, it was found out that they suffer from some difficulties in mastering some communication skills, whether verbal or written communication.

The researcher tried to verify the existence of the problem in an accurate way, so he used two tools for this purpose. First, the researcher interviewed some English majors (60 students) and asked them the questions of the interview form. Some of them stated that they suffer from some difficulties in mastering communication skills. By analyzing their responses to the interview questions, and their marks in the communication skills subject, the researcher found out the following:

- 72% stated that, they suffer from some difficulties in some cultural aspects.
- 70% stated that, they suffer from some difficulties in active listening.
- 90% stated that they suffer from some difficulties in straight talking.
- 63% stated that, they suffer from some difficulties in non-verbal communication.
- 59% stated that they suffer from some difficulties in stress management.
- 74% stated that they suffer from difficulties in AI literacy.

Therefore, English majors suffer from some difficulties in some communication skills.

Statement of the Problem:

English majors suffer from some difficulties in some communication skills, including:



- Recognizing cultural aspects.
- Active listening, as one of the most important aspects of communication.
- Straight talking (Conversation) as the basis of communication.
- Non-verbal communication.
- Stress management.
- AI literacy

So, the present study attempted to investigate the following main question:

What is the effect of using Artificial Intelligence (Chabots) on developing English majors' Communication Skills?

Hypotheses of the Study:

- 1- There is a statistically significant difference (favoring the experimental group) between mean scores obtained by the experimental group and the control group at the post test for the skill of recognizing and using cultural aspect.
- 2- There is a statistically significant difference (favoring the experimental group) between mean scores obtained by the experimental group and the control group at the post test for the skill of active listening.
- 3- There is a statistically significant difference (favoring the experimental group) between mean scores obtained by the experimental group and the control group at the post test for the skill of straight talking.
- 4- There is a statistically significant difference (favoring the experimental group) between mean scores obtained by the experimental group and the control group at the post test for the skill of non-verbal communication.
- 5- There is a statistically significant difference (favoring the experimental group) between mean scores obtained by the experimental group and the control group at the post test for the skill of stress management.

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- 6- There is a statistically significant difference (favoring the post-test) between mean scores obtained by the experimental group at the pre and post communication test.

Aims of the Study:

The current study attempted to:

- 1- develop some English communication skills of English majors.
- 2- relieve stress of communication of English majors.
- 3- reinforce AI literacy at English majors.

Significance of the Study:

The significance of the current study stemmed from the following considerations:

- 1- Developing some communication skills of English majors.
- 2- Relieving stress of communication of English majors.
- 3- Reinforcing AI literacy of English majors.
- 4- Motivating the English majors to identify other cultures and to accept the other.
- 5- Encouraging English majors for cultural exchange and looking for meaning.
- 6- Encouraging English majors for self-learning and interaction with each other.

Participants of the Study:

The study was conducted in Minia Higher Institute of Languages in the first term of 2023-2024. The study sample consists of 60 male and female students enrolled in the third year (English department).

Study Variables:

The present study included the following variables:

- 1- **The independent variable:** Using artificial intelligence (Chabots)
- 2- **The dependent variables:** Developing some English communication skills of the English majors.
- 3- **the control variable:** Performance level.

Design of the Study

To investigate the effectiveness of this program, the study employed the pre-post control group design. It is a quasi-experimental research design in which the same dependent variable is measured in both control and

experimental group participants before and after administrating a treatment. The study sample consisted of 60 students which were divided equally into the experimental group (n = 30) and the control group (n = 30). Also, the mixed approach was employed in the current study to deal with both qualitative and quantitative data and to present answers to research question through both numerical and narrative forms.

Instruments and Materials of the Study:

- 1- A performance test in the selected communication skills that includes questions which examine cultural items, listening items, conversation items and non-verbal communication cues.
- 2- Students' questionnaire on the difficulties which they face in English communication, AI literacy and communication stress management. The questionnaire was developed by the researcher and it consists of 6 questions.
- 3- English communication (Chabots) program which consists of four units including the topics stated below.

The following procedures were taken in designing the AI chatpot lessons and activities:

- Writing the list of English communication skills by using the following sources:
 - a- Analyzing the communication skills course description at Minia Higher Institute of Languages.
 - b- Live observations.
 - c- Reviewing the literature.
 - Stating the objectives of English communication skills AI Chatpot for English majors who are expected to be able to:
 - acquire some English cultural aspects,
 - listening actively, while they communicate in English.
 - communicate in English language.
 - acquire non-verbal communication skills.
 - manage English communication stress.
 - use artificial intelligence (AI) to develop their English communication skills.
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- Evaluating the communication skills chatpot by jury members to decide its suitability (8 members)

Material:

For (36 hours) through a full semester, the researcher used an AI English communication (Chabots) program as its material was developed by the researcher and was designed by a web developer.

The chatbot consists of four units, which dealt with the following topics:

- Recognizing cultural aspects.
- Active listening, as one of the most important aspects of communication.
- Straight talking (Conversation) as the basis of communication.
- Non-verbal communication.
- Stress management.
- AI literacy

Each lesson took a lecture at the English lab, where the learners used their mobile phones and tablets, while the teacher used the smart board to teach the communication skills and to direct the students to the chatbot content, then learners were asked to work in some activities after each lesson at their homes, and then e-mail the answer to the researcher. So all lessons and activities took the first term of the academic year 2023/2024, while there was an introductory period where the researcher introduces the rules, and how to use the chatpot to the English majors.

Results Related to the Study Hypotheses:

Verifying the First Hypothesis:

Table 1: t-value of the post comparison between the experimental group and the control group in the skill of recognizing cultural aspects

The administration of the post test	N	Mean	Standard deviation	t-value	Sig.
The control group	30	3.23	1.25	7.21	0.000
The experimental group	30	5.73	1.43		

From the above table, it is pointed out that the calculated t- value that reached (7.21) was higher than the table value of (t) at the level of (0.01).

This means that there are statistically significant differences between the two groups in favor of the post administration of the experimental group. So, the experiment had an effect on acquisition of the research subjects in the skill of recognizing cultural aspects.

Verifying the Second Hypothesis:

Table (2): t-value of the post comparison between the experimental group and the control group in the skill of active listening

The administration of the post test	N	Mean	Standard deviation	t-value	Sig.
The control group	30	4.87	2.08	7.32	0.000
The experimental group	30	8.22	1.40		

From the above table, it is pointed out that the calculated t- value that reached (7,32) was higher than the table value of (t) at the level of (0.01). This means that there are statistically differences between the two groups in favor of the post administration of the experimental group, so the experiment had an effect on the acquisition of the research subjects in the skill of active listening.

Verifying the Third Hypothesis:

Table (3): t-value of the post comparison between the experimental group and the control group in the skill of straight talking (Conversation):

The administration of the post test	N	Mean	Standard deviation	t-value	Sig.
The control group	30	3.50	1.57	15.43	0.000
The experimental group	30	9.78	1.58		

From the above table, it is pointed out that the calculated t- value that reached (15,43) was higher than the table value of (t) at the level of (0.01). This means that there are statistically significant differences between the two groups in favor of the post administration of the experimental group, so the experiment had an effect on the acquisition of the research subjects in the skill of straight talking (Conversation)

Verifying the Fourth Hypothesis:

Table (4) t-value of the post comparison between the experimental group and the control group in the skill of non-verbal communication

The administration of the post test	N	Mean	Standard deviation	t-value	Sig.
The control group	30	1.80	0.85	9.11	0.000
The experimental group	30	3.87	0.91		

From the above table, it is pointed out that the calculated t- value reached (9,11) was higher than the table value of (T) at the level of (0.01). This means that there are statistically significant differences between the two groups in favor of the post administration of the experimental group, so the experiment had an effect on the acquisition of the research subjects in the skill of non-verbal communication.

Verifying the Fifth Hypothesis:

Table (5): t-value of the post comparison between the experimental group and the control group in the skill of stress management

The administration of the post test	N	Mean	Standard deviation	t-value	Sig.
Control group	30	2.40	0.73	8.55	0.000
Experimental group	30	4.07	0.78		

From the above table, it is pointed out that the calculated t- value that reached (8,55) was higher than the table value of (t) at the level of (0.01). This means that there are statistically significant differences between the two groups in favor of the post administration of the experimental group, so the experiment had an effect on the acquisition of the research subjects in the skill of stress management.

Verifying the Sixth Hypothesis:

Table (6) t-value of the pre-post comparison of the experimental group in English communication skills

The administration of the test	N	Mean	Standard deviation	t-value	Sig.
Pre-test	30	15.80	4.17	14.97	0.000
Post-test	30	31.67	4.01		

From the above table, it is pointed out that the calculated t- value that reached (14,97) was higher than the table value of (t) at the level of (0.01). This means that there are statistically differences between the mean scores in favor of the post administration of the experimental group, so the

experiment had an effect on acquisition of the research subjects in the English communication skills.

Discussion of Results:

All the study hypotheses were verified and the results of the present study confirmed that there is development in student level of English communication performance after the treatment. Means of the scores in the posttest and the obtained t-value in the pre-post test of the study group were in favor of the experimental group and the posttest results, and the t-value was significant. That supports the research hypotheses. Also, that means the study participants developed their English communication skills. This development of English communication skills might be attributed to a number of factors, which include the use of AI (Artificial Intelligence) program (chatbots), peer and group work, varied evaluations, the interactivity, receiving feedback, and using time effectively as communication course is available twenty four hours, so learners can use it at any time from any place.

Recommendations:

- Using Artificial Intelligence “chatbot” to improve students’ English communication skills at all levels of education.
- Adopting the Artificial Intelligence “chatbot” for enhancing other language skills.
- Adopting the Artificial Intelligence “chatbot” for enhancing the skills of other languages.
- Further studies and research are needed about online AI testing and providing AI feedback to learners.
- Integration of AI technologies in language learning environments.

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