International Journal of
Emerging Technologies in Learning

PAPER

ChatGPT and the General Concepts of Education: Can Artificial Intelligence-Driven Chatbots Support the Process of Language Learning?

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ABSTRACT

This paper explores the correspondence between the use of ChatGPT and the generally accepted definitions of learning. The study compares the data provided by ChatGPT with well-known definitions of learning in order to determine if the use of the chatbot supports language learning. The research questions focus on the alignment between ChatGPT and the definitions of learning, the potential behavioral changes resulting from learning via ChatGPT, the learning experience provided by the chatbot, and the support it offers for language learning and the development of linguistic and social skills. The methodology of the study involves a qualitative approach, collecting data from university students who used ChatGPT to complete writing assignments. The participants were observed during their interaction with ChatGPT, and interviews were conducted to gather their perspectives. The collected data were compared to a list of definitions and concepts of learning and language learning. The results indicate that learning via ChatGPT did not lead to immediate behavioral changes, as observed in the participants' interactions. However, the use of ChatGPT, if repeated, could provide an experience that may contribute to learning, particularly in terms of motivation and engagement. The study also found that the learning process with ChatGPT lacked the traditional elements of student-teacher interaction and specific learning materials but offered a wide range of general material for consultation. Furthermore, the use of ChatGPT was seen to support language learning and the development of linguistic and social skills if it is used with other learning strategies. This paper sheds light on the potential of AI-driven chatbots, specifically ChatGPT, for language learning in relation to the use of writing composition and dialogues which leads to more laziness and dependence unless it is used with other learning techniques in language learning context. The use of ChatGPT serves more content knowledge in all disciplines more than oral skills of language learning. It highlights the need for further research to understand the limitations and risks associated with such technology and to explore its effective integration in educational settings.

KEYWORDS

foreign language learning, ChatGPT, chatbots, digital education

1   INTRODUCTION

1.1   Concepts of learning

The idea behind this paper is that there are certain—and generally accepted—concepts of learning. How much will the use of a very modern and current AI-driven tool, ChatGPT correspond with these specific aims of learning? These accepted concepts of education were presented by Al-Obaydi [1]. Academic disciplines have very distinct ideas about what learning is, which is largely due to the many ways that the learning process is evaluated in each individual subject. Even though the concept of learning is widely accepted, definitions of it vary greatly both within and between fields, and new definitions are always presented [28, 34]. Some researchers define learning as changes in the systems that permit behavioral change, whereas others define learning as a change in subsequent behavior. These flexible definitions, which differ throughout fields, are useful and valid in various experimental settings, which permit to express more applicable definitions for the term. In relation to language learning, the process of learning English modifies behavior as a result of experience in the same way that experience modifies the organism mechanistically.

Brown [6] defined English learning process as acquiring subject knowledge or expertise through study, experience, and instruction. Furthermore, language learning, according to Moller & Catalano [29], is heavily influenced by biological, cognitive, and social maturation as well as by pedagogical factors in the teaching and learning process. Language learning depends on imitation, practice, encouragement, and habit building [29]. To this end, the result gained is that everyone has the potential to learn a foreign language successfully to a certain extent. Students, parents, teachers, and the community all have a role in promoting language development as it has become a crucial competence. If this learning process has to be successful, continuous exposure to language in all of its forms is necessary for students. Prior to moving into the greater community, students have more opportunities to study languages outside school borders. In order to help students reach their personal, social, and academic objectives, many techniques could be used through which they can continue to develop their language knowledge, abilities, and strategies.

One of the main new trends, or at least potentially, in language learning is various chatbots. Chatbots are an example of macro- and micro-level of utilization of AI (Artificial intelligence) used in the classroom, or even outside, to help students improve their speaking, reading, listening, and writing skills, among other language-related abilities [15]. According to Ashfaque [2], a chatbot is a computer program that replicates human-like, natural discussions with people using text and/or voice, the human-computer interaction takes its role. The conversation system might be text-based or/and task-based, and it can answer using speech, visuals, virtual motions, or even physically supported by tactual gestures [3].

Language teachers are becoming more and more interested in intelligent chatbots because they can instantly and realistically interact with learners in their target language [27]. A distinction is made between old and new chatbot applications. In the first, old chatbots were founded on a set of pre-established rules taken from outside knowledge. As a result, they were not very "intelligent" and were unable to respond to inquiries that were not part of their programming.

On the contrary, the modern application of artificial intelligence (AI-driven chatbots) encourages giving rich output, which is crucial for second language learning success. As a result, they may converse intelligently with people, continuously

learn from previous interactions, develop over time, and serve as devoted language learning helpers [13]. These sophisticated chatbots can offer advanced linguistic input and output, mimic daily conversation practice, and attract the interest of language learners [12, 18]. Klímová and Ibna Seraj [21] demonstrate how a chatbot's potential can be used to apply and integrate the theories and concepts currently employed in EFL teaching and learning, such as the Common European Framework of Reference for languages (CEFR), mind mapping, or self-regulatory learning theory.

One of the main AI-supported and very advanced chatbots is ChatGPT. ChatGPT (generative pre-trained transformer) created by the Microsoft-backed startup OpenAI and released in November 2022, is one of the most sophisticated AI-powered chatbots available on the global market. This technology supports the limited AI, natural language processing (NLP), and automated speech recognition capabilities we know from digital assistants like Siri and Alexa. Although chatbots have been employed in educational contexts since the early 1970s [18, 20], ChatGPT's capacity to realistically replicate human conversation presents a brand-new and fascinating route in language acquisition.

ChatGPT encourages language acquisition by very advanced imitation of real-world interactions. It has the ability to determine a word's meaning in relation to its context, explain grammatical errors, construct writings of different genres (such as emails, stories, and recipes), create quizzes, annotate texts, and provide dictionary definitions, example sentences, and translations [23]. Although all these benefits and more are mentioned by researchers, still many of them call attention to its dangers and limitations, such as cheating [8], plagiarism [23], inaccuracy of responses [4], and cultural bias [34]. All these limitations, in addition to the subjective satisfaction of online education generally [32], lead to pay more attention to the use of it in educational settings and open the door for conducting more research to understand the situation well and to follow utmost caution when dealing with it.

To cover the idea of language learning in relation to ChatGPT, one main aim was raised: to discover whether the kind of data provided by chatbots, more specifically by ChatGPT, supports language learning in one way or another. To reach this end, the researchers attempt to compare what is provided by ChatGPT, through consulting the application by the sample of the study to write composition and dialogues, with some definitions of learning.

1.2   Research questions

The present study intends to answer the following research questions:

- How much the use of ChatGPT corresponds with the generally accepted definitions of learning?
- Does learning via ChatGPT lead to behavioral change?
- Does the use of ChatGPT represent an experience that leads to learning?
- Does learning via ChatGPT have the basic constituents of learning as follows: students interacting with teachers and learning materials in a learning environment?
- Does learning via ChatGPT support language learning according to Krashen's [26] definition of learning?
- Does learning via ChatGPT provide a chance to develop students' linguistic and social skills?

2   METHODOLOGY

The key idea of this research is to determine whether the type of data, experience and results offered by chatbots, more specifically ChatGPT, support language learning in any manner. In order to accomplish this, the researchers first evaluate the information provided by ChatGPT with well-known definitions of learning as they are perceived and reported by the students.

Based on that idea, the researchers choose several well-based and accepted definitions of learning and language learning to be compared with the data gained by a sample of students who tried to use ChatGPT.

The methodology is qualitative with the aim of collecting as much data as possible from the users of ChatGPT.

2.1   Participants

The sample used in the study consists of several university students who study English as a second language in an Iraqi university. All of them were third year students at the English Department, College of Education for Human Science, University of Diyala. They all voluntarily took part in the experiment and their consent was taken orally and the necessary ethical considerations were all taken into account. All of them were accessible to the researchers on a daily basis, allowing for a close observation. Eight students took part in the experiment, and their ages ranged from 20 to 21.

There were several kinds of tasks that the participants were asked to do with ChatGPT, such as to write certain kinds of compositions and practice dialogues and conversations with the chatbot. Specifically, each student was asked to use ChatGPT to complete two pieces of writings. The students worked under the supervision of the researchers and, during the intervention, the students were observed and after the intervention the students were interviewed by the researchers.

2.2   Data collection

The current study concentrated on observing how the participants used ChatGPT for some of their homework; writing compositions and dialogues. As a comparison to the ChatGPT context employed in this study, the researchers then used a list of concepts and definitions of learning and language learning, as they were summarized by Al-Obaydi, Pikhart & Klimova [1]. In order to concentrate on a variety of ideas related to learning in general and language learning in particular, the definitions and notions were divided into several categories.

It has long been acknowledged that it is impossible to come up with a single and accurate scientific definition of learning [28]. Due to this complexity, defining learning is not commonly accepted in modern psychology and neuroscience textbooks. Instead, these concepts discuss and highlight specific experimental subtypes of learning, for which it is simpler to provide an experimentally validated description. Based on that, this study tries to select some definitions, each of which represent a specific theory.

The definitions are six as follows, see Table 1. The first three definitions deal with the concept of learning in general and the second three deals with language learning specifically. For the purpose of making the ultimate judgment, all these definitions will be contrasted and assessed in the context of ChatGPT by direct observation and discussion/interviews. In order to come up with appropriate answers, the researchers formulated questions based on these definitions.

The definitions and ideas mentioned in Table 1 below served as a starting point for the researchers as they evaluated and confirmed their applicability or validity during the real-time learning process in the context of the use of ChatGPT.

Table 1. The definitions and concepts of learning used in this study

Reference	Definition
Skinner [35] De Houwer [9]	The definition of learning is a change in behavior. Determining learning as the behavioral change or altered behavioral outcome reduces the need for speculative inference about (hidden) underlying mechanisms, which is how learning is typically assessed.
Kandel [19] Rescorla [33]	The idea of learning is closely related to experience because it is believed that experience is the source of all knowledge.
Brown [5]	The process of learning involves students interacting with teachers and learning materials in a learning environment.
Krashen [26]	The "learned system," often known as "learning," is the end result of formal education and consists of a conscious process that yields conscious information "about" the language, such as awareness of grammar rules. "Learning" is produced via a logical method in a teacher-centered environment.
Tomlinson & Masuhara [37]	When studying a language, institutions, teachers, and students can all apply their understanding of linguistics and language use. It places a priority on emotional participation, self-appreciation, and learning experiences. It made connections between education and critical thinking, effective communication, and creative learning materials.
(NSFLEP, 2014) National Standards in Foreign Language Education Project [31]	Learning a language gives the learner the chance to develop their linguistic and social skills as well as their understanding of when, how, and why to say what to whom.

3 RESULTS

The results of the study deal with the comparison of the selected definitions with the real occurrence of language learning with the use of ChatGPT. The results are based on direct observation and discussion with participants who used ChatGPT to conduct various tasks and assignments. The research participants were closely observed and then interviewed, and the results of this observation and discussion are as follows:

3.1 Does learning via ChatGPT lead to a behavioral change?

The initial concept of learning stated that "learning is the behavioral change," hence it was investigated what kind of change occurred in students' behavior. During the direct observation of the students, it is clear that what they did when consulting ChatGPT was to suggest a title of a composition or a dialogue and then copy and paste the results. No more action was noticed. Therefore, it is clear that no immediate behavioral change occurred even with the repetition of trials. Thus, there is no learning mentioned according to this definition except with some little effect on reading and writing if we consider them a kind of behavior. Based on that, this definition may not suit this kind of learning but it rather suits psychological and neural sciences [14] due to the requirement for identifying and measuring the physiological mechanisms underpinning learning. Thus, it may represent learning in relation to specific fields.

Behavioral change should occur in any kind of learning as it is considered to be one of the most important aspects of any learning process. Therefore, in the case of ChatGPT, this learning aim is not confirmed based on the observation of the students who used ChatGPT in their classes.

3.2 Does the use of ChatGPT represent an experience that leads to learning?

Since experience is thought to be the source of the knowledge that is learned, experience and the learning idea are closely related. We need first to shed light on the definition of experience to make the meaning of the definition clear. Korte [25] stated that the environmental event that is seen by an organism and has the power to change behavior is referred to as experience. It is worth mentioning that learning may be influenced by experience, but not every experience will lead to learning. As far as ChatGPT is concerned, and depending on the definition of experience as a source of knowledge, learning in this way could be achieved if we put in mind the higher degrees of motivation and engagement this experience could provide [10], due to extensive use and ability to increase users' productivity across virtually all industries [38]. The students consult the ChatGPT to complete their homework and to gain knowledge. Therefore, in this way it could be considered as a kind of learning according to this definition.

Experience can be a great motivator for students as it brings them real-life situations which they consider stimulating because they resemble their life. Therefore, as it was observed, the students could gain from the use of ChatGPT in their foreign language classes as they obtain some experience that could be interesting for them.

3.3 Does learning via ChatGPT have the basic constituents of learning as follows: students interacting with teachers and learning materials in a learning environment?

The learning process, according to Brown [5], should be an interactive process that joins students, teachers, material, and the learning environment. Looking closely to the sample of the students, they represent the learners' side; there is no direct role of teachers in the process except as guides. There is no specific learning material like a textbook but a vast field of general material to be consulted by the students. The physical environment of the classroom, according to Grubough and Houston [16], is one of the first factors that may be seen to have an effect on students' learning. The teacher, on the other hand, has the most responsibility for fostering a positive learning environment, according to Freeman & Anderson [11]. The teacher should make every effort to foster a pleasant learning environment. In relation to the learning environment via ChatGPT, it is not a traditional situation of learning, but it represents a kind of a new trend of learning that is imposed on all educational institutions due to the use of AI applications in teaching and learning process. Thus, learning, according to this definition, is also possible but not ideal.

The biggest issue noted by the research is that the use of ChatGPT does not provide much interaction, either between the students and instructors or among students, and it brings more isolation of the participants, which is not beneficial for their psychological development, well-being, or their social skills development.

3.4 Does learning via ChatGPT support language learning according to Krashen's (1988) definition of learning?

According to Krashen [26], learning is the end result of formal education and consists of a conscious process that yields conscious information "about" the language, such as awareness of grammar rules. By making a simple comparison with the sample of the study, the participants consult the ChatGPT to write a composition or a dialogue. All what they did is to suggest a title or change it. They read the resultant composition and then copy and paste it. Most vocabulary words were still ambiguous to the participants but they do not care about that because their first aim is to complete their homework. In comparison with Krashen's definition, unfortunately, no real learning of language occurred since no real conscious awareness of the rules of grammar or other language systems occurred. On the contrary, the use of the application for writing composition, dialogue, or other kind of homework increases the participants' laziness and dependency. Therefore, ChatGPT proved to be a tool that did not show any development or yield information, skills and expertise.

3.5 Do institutions, teachers, and students apply their understanding of linguistics and language and use it the same way as via using ChatGPT?

Learning a language, according to this definition, is an interactive process where all its constituents, such as language, institutions, teachers, and students, can have a positive role in acquiring the language. Thus, it is not an easy process happening by simply consulting an application. In addition, this definition puts heavy emphasis on socio-emotional aspects of language learning, such as emotional participation, self-appreciation, and learning experiences. It relates the process of language learning to critical thinking, effective communication, and creative learning materials. All these details do not exist when consulting ChatGPT for specific writing or homework. The participants show some motivation and enthusiasm to use the application as using any new technology and the surprising speed of the work. As a result, no real language learning was mentioned.

3.6 Does learning via ChatGPT provide a chance to develop students' linguistic and social skills?

The main focus of this definition of language learning is to provide the learners with a chance to develop their linguistic and social skills. Looking closely to the performance of the sample of the study, and in relation to linguistic skills, there is no speaking in using ChatGPT. Reading and writing are used when asking the application and when checking the result. No listening and grammar development happens, and very little development in the vocabulary. Using the application in this way will support students to copy and paste only without any real effort to learn a language. Based on the second part of the definition, there is no social skill development in this application except when asking about something, to which it will answer. In most cases, specifically in writing tasks, the participants were satisfied with the first answer. Therefore, not much effort was spent. The last part of the definition of language learning focuses on developing students' understanding of when, how, and why to say what to whom. Unfortunately, the recognition of the speaker's

intention and attitude in using ChatGPT is impossible as it is not a real interlocutor but human-like interaction.

The results of the comparison above show that based on the general definition of learning, as with the first three definitions, the possibility of the occurrence of positive learning results is much more in case of the second last definition of language learning, specifically by using assignments of composition writing and dialogues. Language learning is a mix of audio-lingual skills. This means that is possible to benefit from using ChatGPT in gaining content knowledge and information in different kinds of sciences and fields of knowledge. In relation to language learning, which depends mainly on activating the four language skills, it is possible to gain support from such kinds of applications if the teacher work professionally with the students and use the chat by mixing its work with other classroom techniques and with direct observation of the teacher. Language learning needs practice, repetition, and training to work eclectically to produce real language learning context, a matter that is missing in ChatGPT.

4   DISCUSSION

The results described above indicate that ChatGPT does not support the well-established learning theories and concepts with the exception of experiential learning. However, it is this learning that allows students to learn while doing, reflecting and applying the newly acquired knowledge [7, 24]. Therefore, despite all drawbacks, ChatGPT has big potential for foreign language learning since it can make students more autonomous and responsible for their own learning [7]. Therefore, it may suit advanced learners who look for content knowledge more than learning a language. Moreover, it offers authentic language use, reconsiders teaching and assessment methods, as well as enhances personalized learning [17]. Furthermore, Moqbel and Al-Kadi [30] expand that teachers should implement practice-oriented assessments, such as performance-based assessment or self-assessment, which minimize heavy reliance on ChatGPT. They emphasize that there should be an overall shift in the teaching paradigm, which requires educators and education policymakers to revisit L2 pedagogy in their institutions and direct it toward more advanced modes that correspond well to the new pedagogies of projects implementing informal and personalized learning.

In addition, most of the learning concepts and theories need to be modified, precisely on the basis of booming emerging technologies which enable students to learn foreign language skills and structures in a different way and, most frequently, informally. However, to achieve the highest level of language proficiency, teachers can help them find the most suitable method or strategy on how to use these digital tools in the most effective way by activating the professional role of online teachers [36], and that is why it is essential to focus on teaching competences of teachers who use online applications. Therefore, nowadays more than ever, foreign language teachers represent an asset that can contribute to the increasement of students´ creativity and critical thinking skills.

Furthermore, to guarantee safety and efficiency of ChatGPT, there should be collaboration of all stakeholders involved in the educational process, i.e., (software developers, teacher-practitioners and end-users—students) [22].

It is worth mentioning that it is possible to benefit from ChatGPT in relation to language learning, which primarily depends on the activation of the four language

skills, if the teacher pays more attention to interact with the students and makes the chat useful for language learning by combining its work with other classroom strategies and with close observation. In order to generate a real language learning context, language learning requires practice, repetition, and training, all of which are lacking in ChatGPT.

The limitations of this study reflect the fact that the research sample focuses only on one region and the research sample might be bigger. Despite these shortcomings, the results are important since the theoretical underpinnings can be combined with practical use and indicate the opportunities for improvement on how ChatGPT can be beneficial for foreign language education.

5   CONCLUSION

This study revealed opportunities that ChatGPT can offer for language learning in relation to the use of writing composition and dialogues, provided it is used with other learning techniques in language learning context.

Furthermore, on the basis of the findings, the authors of this study propose the following recommendations:

1. This kind of chat represents AI-supported so it differs from the traditional chatbots used by students. This may raise concern about the application of ethical considerations in using it academically. The concerns regarding how it would affect assessments and the possibility that it could be used for cheating are two examples of the ethical use of ChatGPT in education.
2. Language teachers should be aware that chatbots serve content knowledge and information more than training for language use. It could help in language learning but cannot be used solely.
3. Language teachers should use more than one strategy while using this application to confirm continuing process of language learning. It is not enough, for example, to assign homework of composition writing or dialogues via ChatGPT as a help in language learning process. These activities encourage copy and paste only without any extra effort from the students.
4. The continuity and repetition of using ChatGPT will be more useful as the information will increase and the result will be accumulative process of learning.
5. Teachers should pay more attention to the kind of materials gained, specifically the scientific material because no sources or citations are given by ChatGPT. It could be argued that some of its solutions are not wholly unique but rather paraphrases of referred sources [23].

In conclusion, the results of this study call for further research to understand the limitations and risks associated with such technology and to explore its effective integration in educational settings.

6   ACKNOWLEDGMENT

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