v. 4, n. 2, 2024

International Journal of Human Sciences Research

CHATGPT® AS A FOREIGN LANGUAGE ASSISTANCE AND LEARNING TOOL

Gabriel Afonso Bertolini Mendes
``Instituto Federal de Educação, Ciência e Tecnologia de São Paulo`` - Campus Bragança Paulista

André Marcelo Panhan
``Instituto Federal de Educação, Ciência e Tecnologia de São Paulo`` - Campus Bragança Paulista

Abstract: In this article we explore the possibilities of the ChatGPT® generative AI chatbot for language teaching and learning. Furthermore, we also present debates and disadvantages of ChatGPT®. Finally, we present the digital skills that teachers and students need to use this chatbot ethically and effectively to support language learning.
Keywords: chatgpt®. Teaching, learning. chatbot

INTRODUCTION

Artificial intelligence has been transforming several areas of society, especially education. In this context, ChatGPT® can be presented as a new technology with great potential to assist in the teaching and learning process. According to Singh and Mathew (2021): "... the model can be used to create educational chatbots that answer questions and offer support in real time. Furthermore, ChatGPT® can be used to generate text summaries and syntheses, facilitating the understanding of complex content…".

Developed by OpenAI[1], ChatGPT® is a language model trained on a vast collection of text data.

Its acronym can be translated as "*Generative Pre-Trained Transformer*" and works as a chat prototype that crosses information obtained on the internet, transforming users' questions into answers.

This article presents how ChatGPT® can become a tool capable of assisting teachers in the teaching/learning process and presents the model to be used in the application of English classes.

THEORETICAL FOUNDATION CHATGPT®

To begin approaching the use of ChatGPT® as a teaching tool, it is first necessary to understand what it is and how this artificial intelligence language model works.

ChatGPT® is based on the GPT architecture (*Generative Pre-trained Transformer*) developed by OpenAI. GPTs are language models that are pre-trained on large amounts of textual data and can perform a wide range of language-related tasks (Radford et al., 2019; Brown et al., 2020).

This *chatbot* is capable of generating natural language responses to questions and commands provided by users.

Its operation is based on deep neural networks and natural language processing algorithms. The model is pre-trained on a vast set of textual data, such as books, articles, websites and others, with the purpose of learning complex linguistic patterns and contexts. This process is called pre-training.

After prior training, ChatGPT® can be adjusted to specific tasks, such as answering questions or performing automatic translation. When a user asks a question or presents a command, the model uses the input to generate a natural language response.

ChatGPT® uses an architecture based on transformers, which are neural networks with an encoder-decoder architecture, based on an attention mechanism that learns the contextual relationships between words in a text. The network receives a sequence of words as input, encodes them into representations in the attention layers, and decodes them into words again, which allows the model to take into consideration, the entire context of the input to generate a coherent response (VASWANI et al, 2017).

One of the ways in which teachers can

1. AI research and implementation company, whose mission, according to the founders, is to ensure that general artificial intelligence benefits all of humanity

apply the use of ChatGPT® as a tool in the teaching-learning process include:

- Vocabulary and grammar: ChatGPT® can also be used to help teach vocabulary and grammar, as it has a vast database of English words and phrases. Teachers can design exercises that require students to use certain words or structures in their responses;
- Conversation and pronunciation practice: English learners need conversation practice to improve their English fluency. Teachers can use ChatGPT® to model conversations and encourage students to engage in dialogue with AI;
- Writing practice: ChatGPT® can also be used to practice writing in English;
- Cultural Knowledge: One of the challenges for English learners is understanding the cultural nuances of the English language. ChatGPT® can provide examples of idioms, slang, and other cultural references that teachers may not find in textbooks or traditional language classes to provide to students.

Overall, ChatGPT® can be a valuable resource for English teachers looking to provide their students with additional speaking practice, vocabulary and grammar instruction, cultural knowledge, and pronunciation/writing knowledge from feedback provided by the tool.

PEDAGOGICAL RESOURCES AND BENEFITS

ChatGPT® supports language learning by simulating authentic interactions. It can identify the meaning of a word in context, correct and explain language errors, create texts in various genres (e.g. emails, stories, recipes), develop quizzes, annotate texts and offer dictionary definitions, example sentences and translations.

An example of an exercise is "relate the columns", making it possible to create an exercise model on grammar in a personalized way, in addition to developing subjects in which the student may have greater affinity, thus better assimilating all the content of the class. For example, the student likes football and is learning the simple past tense in English, an exercise can be created on this topic as shown in Figure 1.

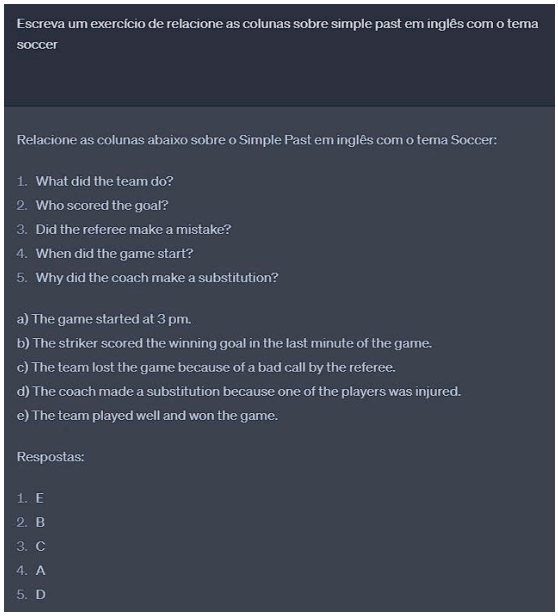

Figure 1 - Relationship exercise between columns generated by the ChatGPT® platform

Source: Authors

It is possible to prepare a class in a few minutes, thereby saving a significant amount of time, considering that ChatGPT® can create new materials from the database it has. As exemplified in Figure 2, an example of an exercise on interpreting text generated by ChatGPT®.

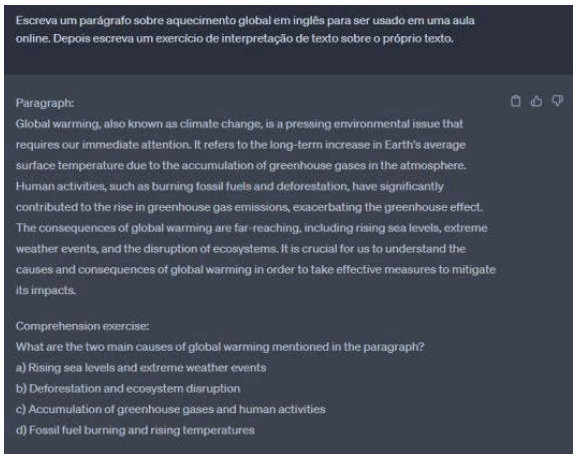

Figure 2 - Exercise on global warming generated by the ChatGPT platform®

Source: Authors

You can ask the student for a writing exercise and ChatGPT® will return this exercise with the correction made and pertinent explanations for the errors made so that the student can understand the gaps in their learning. Below is an example in Figure 3.

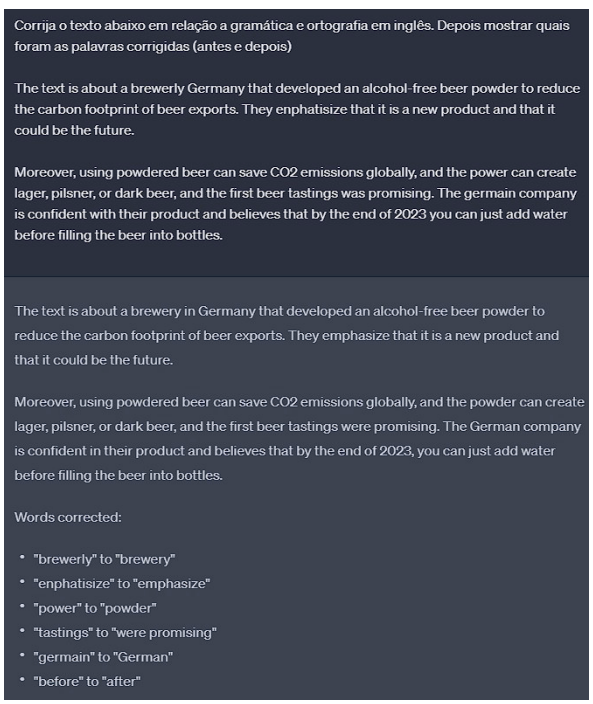

Figure 3 – Example of writing correction generated by the ChatGPT platform®

Source: Authors

Later, the exercise can be used in class and in the student's study plan, even in relation to writing exercises, it is also possible to request ChatGPT® to evaluate the text based on the grade that the exercises would receive in the proficiency exams of the school. English language (TOEFL / IELTS).

The user can ask ChatGPT® to rewrite the text, but with the necessary corrections, so that this text obtains a better grade in the English language proficiency exam.

DEBATES AND DISADVANTAGES RELATED TO CHATGPT ®

With the launch of the beta version of ChatGPT® in November 2022, a debate began about its impact on the field of education. While many commentators recognize its potential as a tool to support education and potential benefits as a disruptor of the *status* quo (e.g., McMinn, 2023), others highlight its drawbacks and risks.

A debate swirls around the ethical use of ChatGPT® in education, including fears that it could be used to cheat and concerns about how it will affect assessment (Cassidy, 2023). Recently, Turnitin announced the introduction of an update that recognizes text written by artificial intelligence. Although digital tools that claim to detect AI-generated text are being developed (for example: GPTZero), this response can lead to a "cat and mouse" game and does not address the fundamental utility of ChatGPT® or the ethical use of technology in general. Likewise, there are doubts about the originality of ChatGPT® responses. ChatGPT® does not provide any sources or citations. It could be argued that your answers are not entirely original, but rather paraphrases of sources that have not been properly cited (i.e. plagiarism).

A second debate revolves around the accuracy of chatbot responses. While OpenAI cautions that ChatGPT® responses may not be

accurate and offers users the option to provide feedback (thumbs up or thumbs down), the authoritative nature of responses may lead users to take them at face value. Bowman (2022) notes, "There are still many cases where you ask [ChatGPT®] a question and it will give you a very impressive-sounding answer that is completely wrong." For example, if a student asks ChatGPT® to correct and explain their grammatical errors. This may provide an answer as shown in Figure 4.

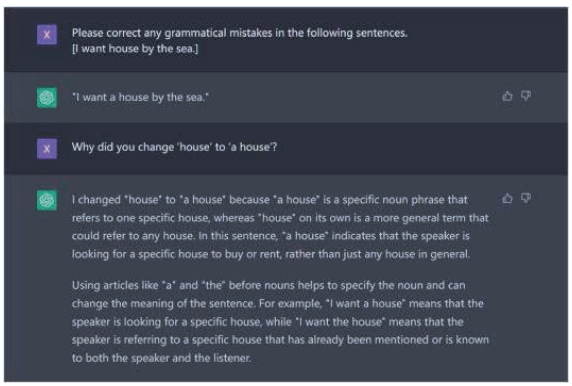

Figure 4 – Example of syntax correction generated by the ChatGPT platform®

Source: Authors

However, the explanation provided by ChatGPT® is long-winded, repetitive and inaccurate. He uses "*specific*" to refer to "a" and "*the*", and a singular noun like "*house*" can never be used in English without an article. Because its answers seem definitive, with little to no protection, users may assume the chatbot is correct even when it is wrong. Particularly, this can be a problem for young learners who may not be able to "verify" responses generated by ChatGPT®.

A third debate focuses on the cultural bias inherent in the database and source algorithms (Rettberg, 2022). Most of the text in the database is derived from an English corpus and then translated into target languages (e.g. Chinese, Japanese). Additionally, it includes many words that are written more often than spoken. These issues are particularly concerning in language teaching, as students likely come from diverse cultural backgrounds and may not know that ChatGPT® and other AI-based tools are not culturally neutral.

These debates have led to strong reactions from certain government and educational institutions. For example, the New York City Department of Education blocked access to ChatGPT® on school devices due to "concerns about security and content accuracy" (Elsen-Rooney, 2023), and universities in Australia have resumed using paper and pen exams after students were caught using ChatGPT® to write essays (Cassidy, 2023).

DIGITAL COMPETENCE REQUIRED TO USE CHATGPT®

Reactions from governments and educational institutions, however, are not the best way to resolve problems with ChatGPT®. ChatGPT® is here to stay, and other advanced AI-driven digital tools are being launched (e.g. you.com, an AI-driven search engine). Hockley (in press) highlights the need to prioritize the principled use of AI-driven educational technology and develop strategies to manage its drawbacks. Therefore, teachers and students must develop the specific digital competencies necessary to use such tools in a pedagogically beneficial and ethical way. This involves learning how to interact with ChatGPT® and facilitating learning tasks that capitalize on its possibilities, such as those described in this article. It also requires a critical awareness of the drawbacks and risks of ChatGPT®. Although language teachers have become more digitally competent due to the need to engage in online teaching during the COVID-19 pandemic (Moorhouse, 2023), teachers need more skills to utilize ChatGPT® successfully than currently have. Table 1 provides an overview of the digital competence teachers need to use ChatGPT®, using a conceptual model developed by

Instefjord and Munthe (2017).

Technological proficiency	• Be aware of ChatGPT® features • Understand how ChatGPT® works • Create effective prompts and interact with ChatGPT® • Troubleshoot problems using ChatGPT® in the classroom • Stay up to date with changes to ChatGPT®
Pedagogical compatibility	• Think and plan ways to use ChatGPT® to enhance or transform language teaching and learning tasks • Implement tasks that use ChatGPT® • Guide students to use ChatGPT® for self-directed learning
Social consciousness	• Be critically aware of the disadvantages of ChatGPT® and consider them when planning and implementing tasks • Inform students about the risks, ethical issues and disadvantages of ChatGPT®

Table1 - Specific Forms of Digital Competence Required to Use ChatGPT®

Source: Instefjord and Munthe (2017).

Furthermore, there is now a greater need to focus on developing students' digital competence. Traditionally, educational institutions have helped students acquire basic technological proficiency, such as the ability to use electronic platforms (e.g., Padlet, Google Docs), electronic portfolios, and video production tools. However, in response to rapid digital advances, scholars have highlighted the need for more advanced digital competence among students (e.g., Jones and Hafner, 2022). The launch of ChatGPT® makes this even more urgent. Just like teachers, for students to use ChatGPT® as a learning tool, they need to recognize its limitations, consider how to use it safely and with integrity, and understand their responsibilities as digital citizens.

Finally, education departments, universities, and schools must develop guidelines for the use of such tools, modify their teaching and assessment practices, and consider how best to prepare students for a world where AI-based digital tools are a normal part. of daily life.

RESULTS AND DISCUSSION

As Artificial Intelligence (AI) advances technologically, it will inevitably bring many changes to the teaching-learning process. However, research on AI in education reflects a weak connection to pedagogical perspectives or instructional approaches. AI technologies can benefit motivated and advanced learners. It is necessary to understand the role of the teacher in motivating students in mediating and supporting learning with AI technologies in the classroom. This study presented the pedagogical resources and benefits that ChatGPT® offers to language learning by simulating authentic interactions.

While many educators recognize its potential as a tool to support education and potential benefits as a status disruptor, others highlight its drawbacks and risks.

The debate over the use of ChatGPT® as a tool to support education revolves around ethical use, the accuracy of chatbot responses and the cultural bias inherent in the database and data originating algorithms.

Finally, an overview of the digital competence that teachers need to use ChatGPT® was presented, using a conceptual model developed by Instefjord and Munthe (2017).

CONCLUSIONS

It has been argued that AI-based digital tools are here to stay, therefore language teachers and learners need advanced digital competence to capitalize on them and successfully navigate their risks and drawbacks.

ChatGPT® can be used as a versatile tool with the potential to promote language learning in an adaptive way, taking advantage of the tool's pedagogical possibilities in order to enrich education with solid principles based on technologies that use Intelligence Artificial.

REFERENCES

Alec Radford, Jeffrey Wu, Rewon Child, David Luan, Dario Amodei, and Ilya Sutskever. 2019. Language models are unsupervised multitask learners. OpenAI Blog, 1(8):9. Disponível em: https://d4mucfpksywv.cloudfront.net/better-language- models/language_models_are_unsupervised_multitask_learners.pdf. Acesso em: 30 mar. 2023.

Bowman E (December 19, 2022) A new AI chatbot might do your homework for you. But it's still not an A+ student. NPR. Disponível em: www.npr.org/2022/12/19/1143912956/chatgpt-ai- chatbot-homework-academia. Acesso em: 30 mar. 2023.

Cassidy C (2023) Australian universities to return to 'pen and paper' exams after students caught using AI to write essays. The Guardian Online. Disponível em: www.theguardian.com/australia-news/2023/jan/10/universities-to-return-to-pen-and-paper- exams-after-students-caught-using-ai-to-write-essays. Acesso em: 04 abr. 2023.

Education in the Era of Generative Artificial Intelligence (AI): Understanding the Potential Benefits of ChatGPT® in Promoting Teaching and Learning. Disponível em: papers.ssrn.com/sol3/papers.cfm?abstract_id=4337484. Acesso em: 01 abr. 2023.

Elsen-Rooney M (2023) NYC education department blocks ChatGPT on school devices, networks. Chalkbeat New York. Disponível em: ny.chalkbeat.org/2023/1/3/23537987/nyc- schools-ban-chatgpt-writing-artificial-intelligence. Acesso em: 03 abr. 2023.

Instefjord E, Munthe E (2017) Educating digitally competent teachers: a study of integration of professional digital competency in teacher education. Teaching and Teacher Education 67: 37–45.

Jones R, Hafner C (2022) Understanding Digital literacies: A practical introduction. New York: Routledge.

McMinn S (2023) ChatGPT killed the classroom star: AI's rise means it's time to rethink teaching and testing. South China Morning Post Online. Disponível em: www.scmp.com/comment/opinion/article/3206436/chatgpt-killed-classroom-star-ais-rise- means-its-time-rethink-teaching-and-testing. Acesso em: 29 mar. 2023.

Moorhouse BL (2023) Teachers' digital technology use after a period of online teaching. ELT Journal. Epub online. Disponível em: https://academic.oup.com/eltj/advance- article/doi/10.1093/elt/ccac050/6972857. Acesso em: 03 abr.2023.

Rettberg JW (2022) ChatGPT is multilingual but monocultural, and it's learning your values. Blog entry. Disponível em: jilltxt.net/right-now-chatgpt-is-multilingual-but-monocultural-but-its- learning-your-values/. Acesso em: 10 abr. 2023.

SINGH, Aarti; MATHEW, John. Use of Chatbots in Education: A Review of Literature. IEEE Conference on Emerging Technologies and Innovation in Education (ETIE), p. 20-24, 2021.

Tom B Brown, Benjamin Mann, Nick Ryder, Melanie Subbiah, Jared Kaplan, Prafulla Dhariwal, Arvind Neelakantan, Pranav Shyam, Girish Sastry, Amanda Askell, et al. 2020. Language models are few-shot learners. arXiv preprint arXiv:2005.14165.

VASWANI, A.; SHAZEER, N.; PARMAR, N.; USZKOREIT, J.; JONES, L.; GOMEZ, A. N.;

KAISER, L.; POLOSUKHIN, I. Attention is all you need. CoRR, abs/1706.03762, 2017. Disponível em: arxiv.org/abs/1706.03762. Acesso em: 04 abr. 2023.