


ChatGPT and Education: A Systematic Review

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Abstract: *With the aim of establishing an evidence-based theoretical framework on the use of ChatGPT in the educational field, this paper presents a systematic review following the PRISMA methodology. The study includes scientific articles on the subject published in SCOPUS up until October 2023, resulting in a final sample of 58 publications. The findings highlight the advantages and disadvantages of this tool in education, key factors, and successful educational experiences. In conclusion, the research underscores the pressing need to foster a culture of adaptability and ethical awareness to ensure the effective integration of transformative technologies like ChatGPT into educational practices. Furthermore, it advocates for the implementation of robust mechanisms for critical reflection, regulatory oversight, and ethical training, directed towards both educators and students. The limitation of this study lies in the fact that it addresses an emerging and rapidly evolving topic. This paper offers important implications for the use of ChatGPT and similar applications in education.*

Keywords: artificial intelligence, ChatGPT, education, literature reviews, systematic review, technology uses in education.

Resumen: *Con el objetivo de establecer un marco teórico basado en evidencias sobre el uso de ChatGPT en el ámbito educativo se presenta una revisión sistemática con metodología PRISMA. En el estudio se incluyen artículos científicos sobre la temática publicados en SCOPUS hasta octubre de 2023 obteniendo una muestra final de 58 publicaciones. Los resultados determinan ventajas y desventajas de dicha herramienta en educación, factores clave, y experiencias educativas de éxito. En conclusión, la investigación subraya la imperiosa necesidad de fomentar una cultura de adaptabilidad y conciencia ética para garantizar la asimilación efectiva de tecnologías transformadoras como ChatGPT en las prácticas educativas. Más allá, se aboga por la implementación de mecanismos robustos para la reflexión crítica, la supervisión regulatoria y la formación ética, dirigidos tanto a educadores como a estudiantes. La limitación del estudio recae en ser una temática incipiente y muy productiva. Este artículo ofrece implicaciones importantes en la utilización de ChatGPT y aplicaciones similares en educación.*

Palabras clave: inteligencia artificial, ChatGPT, educación, revisión de la literatura, revisión sistemática, usos de la tecnología en educación.

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INTRODUCTION

Foundations of Artificial Intelligence

Although Artificial Intelligence (AI) has exponentially developed in recent years due to significant technological advancements, we must trace back to 1956 to find the first usage of this term. During the Dartmouth Conference in New Hampshire, USA, American computer scientist John McCarthy coined the idea of "AI," giving birth to a new discipline of study and technological application (Moor, 2006).

Currently, it is a trendy term and is widely used in numerous sectors beyond the purely technological realm. Considering this, we can attempt to define AI as the application of digital technology and information processing to enable computers to perform tasks by mimicking intelligent human actions, such as drawing conclusions, analyzing situations, and making decisions (Duan et al., 2019; Hwang et al., 2020; Topol, 2019).

Two types of AI can be considered. Firstly, weak or narrow AI employs rational processes to address specific and concrete intellectual challenges. For instance, object detection on the road embedded in autonomous vehicle technology or generative language models like ChatGPT. Secondly, strong or general AI is based on machine learning and is programmed to learn from the data it receives. For example, some robots are programmed to interact with the environment, make decisions, and learn from their own experiences. The Meta-learning for Compositionality (MLC) line is of importance, which, through the training of artificial neural networks, enables technology to generalize concepts based on its learning experiences (Lake & Baroni, 2023). Additionally, the theoretical concept of superintelligence is noteworthy, referring to a form of AI that would possess the ability to surpass human intelligence in all fields of study and skills. It would, therefore, be a stage beyond strong or general AI as it would surpass human intelligence itself.

AI in the educational field

In the field of education, AI has been utilized in various pedagogical and didactic processes through different educational applications and tools that enable students to enhance their learning process (Forero-Corba & Negre Bennasar, 2023). The impact is not only seen in subjects such as educational robotics (González-González et al., 2021) but also in all areas of knowledge such as STEM (Wu et al.,

2023), language learning (Kostka & Toncelli, 2023), or physical education (Yu & Mi, 2023). Likewise, in cross-cutting competencies such as emotional management (Fernández Herrero et al., 2023) or creativity (Vicente-Yagüe-Jara et al., 2023).

The application of AI in the educational field brings forth a series of opportunities, such as personalized learning experiences (Alasadi & Baiz, 2023), guidance in solving complex tasks and improvement in the assessment process (Zhu et al., 2023), or the enhancement of student competencies and greater efficiency in administrative costs (Pisica et al., 2023), improving the functioning of the educational system (Al-Tkhayneh et al., 2023). However, it also generates drawbacks such as a reduction in the ability to explore different perspectives or develop their own ideas (Vargas-Murillo et al., 2023), a lack of critical thinking (Zhu et al., 2023), programming or data processing errors, and a lack of human relationships (Al-Tkhayneh et al., 2023), among others. Hence, the importance of teachers acquiring digital competencies specifically for the use of AI in the educational field.

Finally, it is crucial to highlight the ethical complexity of using intelligent tools in the teaching and learning process, leading to a certain moderation in their use within the educational context (Bogina et al., 2022). Authors like Pattier and Reyero (2022) conclude the need for pedagogical judgment when addressing the question of the appropriateness of technology use in classrooms. Following Alasadi and Baiz (2023), the implementation of AI in education should adopt a reflective, ethical, and inclusive approach.

ChatGPT and the educational revolution

In November 2022, the company OpenAI launched a new AI application called ChatGPT. It is a generative language model that uses a neural network architecture trained on a wide range of internet data. GPT (Generative Pretrained Transformer) refers to how the model was created and what it does. Thus, ChatGPT can generate text that may appear as if it were written by a human. It can respond to user inputs in a conversation, generating responses based on its training. The quality of ChatGPT's responses can be enhanced depending on the instructions given during the chat. Moreover, being a conversational model, questions can be nuanced or specified to achieve a more suitable response to what the user is seeking (Ajevski et al., 2023).

This model marked a watershed moment in the application and use of AI in the educational realm as the quality and level of sophistication offered by

ChatGPT surpassed what was previously known (Sullivan et al., 2023). In addition to the quality of responses, the free availability of the application, its broad applicability in different contexts, and ease of use contributed to ChatGPT garnering 57 million active users within its first month of operation (Flynn, 2023). Since then, the user base has continued to grow exponentially.

In the educational sphere, it was observed that within less than two months after the launch of ChatGPT, one-fifth of students were using it for their academic work (Cassidy, 2023). Shortly afterward, it was 30% of the total student population, and three out of four users believed they were copying, yet continued to use it (Intelligent, 2023). Hence, the importance of conducting a systematic review that can compile and classify the most significant research conducted on the topic of ChatGPT and education.

Objectives

Our research aims to establish a theoretical framework of evidence regarding the use of ChatGPT in the educational field. The specific objectives of the study are as follows: (1) Determine possible advantages and disadvantages in the implementation of ChatGPT in the educational context; (2) Identify

key factors to consider within the pedagogical realm related to the use of ChatGPT in education; (3) Present successful educational experiences in the utilization of ChatGPT in the educational domain.

METHOD

The systematic review was conducted following the methodology and guidelines proposed by the PRISMA statement to establish internationally standardized and reliable indicators (Page et al., 2021), taking into account the methodological guidelines inherent in the production of high-quality systematic reviews (Alexander, 2020).

Database and selection criteria

In order to obtain internationally recognized results, the systematic review considered documents from the SCOPUS database. To select documents, the following search parameter was used: "ChatGPT AND education" and "Search within Article title."

Regarding eligibility criteria, two categories (formal and content) and four criteria (publication type, review process, text availability, and topic) were taken into account. These criteria are shown in Table 1.

TABLE 1
Eligibility criteria

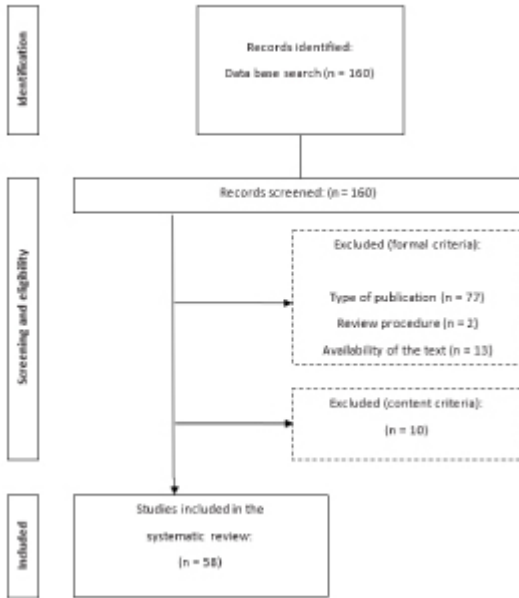
Category	Criterion	Inclusion	Exclusion
Formal	Publication type	Articles published in scientific journals	Conference proceedings, books, chapters, or similar
	Review process	Peer-reviewed	Non-peer-reviewed
	Availability of the text	Full text available	Full text not available
Content	Topic	Related to the use of ChatGPT in education	Other topics

Furthermore, all languages and fields of knowledge were considered. Likewise, research pertaining to all educational stages was embraced.

Document identification process

The search parameter was entered into the database on October 14, 2023, at 12:00 (GMT), yielding a total of 160 documents. These documents were analyzed considering formal and content eligibility criteria. A total of 58 articles were extracted for use in the systematic review, as depicted in Figure 1.

Fig 1
Flow diagram



Articles included in the systematic review

Applying the methodology outlined earlier, the systematic review was conducted with a total sample of 58 documents, which are presented in Table 2.

TABLE 2
Articles included in the systematic review

Authors	Year	Authors	Year
Ajevski et al.	2023	Mohammed et al.	2023
Ali et al.	2023	Naidu & Sevnarayan	2023
Bitzenbauer	2023	Ngo	2023
Borger et al.	2023	Nikolic et al.	2023
Breeding et al.	2023	Oh et al.	2023
Castonguay et al.	2023	Pavlik	2023
Chaundhry et al.	2023	Rahimzadeh et al.	2023
Chiu	2023	Rahman & Watanobe	2023
Choi et al.	2023	Rasul et al.	2023
Choudhary et al.	2023	Rawas	2023
Cooper	2023	Rodrigues & Rodrigues	2023
Currie et al.	2023	Rudolph et al.	2023a
Dalalah & Dalalah	2023		2023b
Ellis & Snade	2023	Sallam et al.	2023
Fialka et al.	2023	Sánchez-Ruiz et al.	2023
Fütterer et al.	2023	Sedaghat	2023
Gill et al.	2023	Sharma & Sharma	2023
Gilson et al.	2023	Singh et al.	2023
Halaweh	2023	Su & Yang	2023
Ivanov & Soliman	2023	Sullivan et al.	2023
Jeon & Lee	2023	Tlili et al.	2023
Karakose et al.	2023	Totlis et al.	2023
Keiper et al.	2023	Uddin et al.	2023
Khan et al.	2023	Vargas-Murillo	2023

Khurma et al.	2023	Vicente-Yagüe-Jara et al.	2023
Lee	2023	Wandelt et al.	2023
Loos & Gropler	2023	Wang, Wu et al.	2023
Lower et al.	2023	Wang, Tang et al.	2023
Michel-Villarreal et al.	2023	Zhu et al.	2023

RESULTS

Benefits, advantages, strengths, opportunities and useful functions

The articles reviewed in this systematic analysis highlight the benefits of integrating ChatGPT into education, including fostering creativity and innovation (Halaweh, 2023), enhancing critical thinking (Choi et al., 2023), improving student performance (Uddin et al., 2023), providing personalized learning and feedback (Rasul et al., 2023), breaking language barriers (Borger et al., 2023), enhancing request formulation skills, and increasing student engagement (Fiialka et al., 2023), fostering writing and verbal creativity (Vicente-Yagüe-Jara et al., 2023), improving programming and writing skills (Wandelt et al., 2023), promoting teamwork (Gill et al., 2023), and saving time (Halaweh, 2023; Ngo, 2023; Wandelt et al., 2023).

Moreover, strengths identified include language understanding, human-like conversation, flexibility, speed, cost-effectiveness, potential for a 24/7 personal assistant, logical and well-organized responses, minimal biases and harmful information, and awareness of its own limitations (Rudolph et al., 2023b), as well as providing responses akin to human dialogues, assisting with complex tasks, creating human-like writing, and offering performance measurement and feedback (Zhu et al., 2023).

These opportunities encompass personalized learning, interactive learning, automated grading, intelligent tutoring, content creation, language learning, and accessibility (Rawas et al., 2023), addressing the demand for online and individualized learning (Zhu et al., 2023), facilitating lesson planning, personalized learning support, quick assessment, and evaluation (Rahman & Watanobe, 2023).

Additionally, ChatGPT offers automated scoring, teaching assistance, personalized learning, research support, quick access to information, case scenario generation, content creation for learning facilitation, and language translation (Khan et al., 2023), serves as an instructional materials creator and online educator (Gill et al., 2023), facilitates idea generation and

debates (Keiper et al. 2023; Naidu & Sevnarayan, 2023), assists with research, assignments, homework, writing support, and exam preparation (Khurma et al., 2023).

Furthermore, ChatGPT can respond to various question types, including multiple-choice, short-answer, brief essay, true/false, and fill-in-the-blank questions, with responses deemed accurate and thematically aligned by experts (Ali et al., 2023; Keiper et al., 2023; Sallam et al., 2023). However, challenges such as lack of conciseness, redundant content, and gaps exist in ChatGPT responses (Sallam et al., 2023).

Therefore, comparative studies between resources generated by ChatGPT and evidence-based resources are crucial, with evidence suggesting that ChatGPT provides clearer and better-organized articles, albeit evidence-based resources are perceived as more comprehensive (Breeding et al., 2023). Finally, hypotheses proposing the potential of hybrid human-machine intelligence warrant further investigation to ascertain their validity (Rahimzadeh, 2023).

Limitations, disadvantages, weaknesses, challenges, barriers and threats

The use of ChatGPT in education reveals several limitations and challenges. These include the necessity for continual updating and training (Ali et al., 2023), deficiencies in textual understanding, language proficiency, and knowledge boundaries, as well as the absence of emotion recognition and original idea generation, leading to potential misinformation and variability in response quality (Rudolph et al., 2023b). Furthermore, issues such as incorrect answers, lack of specificity, and constraints in information quality and quantity are evident (Fiialka et al., 2023), along with challenges in source reliability and precise language usage (Ngo, 2023).

Additionally, ChatGPT struggles to replace hands-on learning experiences or diagnostic methods in healthcare and sciences (Choudhary et al., 2023; Lee, 2023), and it cannot supplant the role of teachers (Loos et al., 2023). Concerns regarding false information, critical thinking deficits, and shallow understanding of its outputs further complicate its utility (Zhu et al., 2023).

Moreover, notable challenges encompass academic integrity, blind trust in AI, evaluative hurdles, and ethical implications (Rahman & Watanobe, 2023), alongside bias, lack of human interaction, technical issues, and privacy concerns (Rawas, 2023). Academic honesty, reliability, assessment biases, and awareness deficiencies are also significant barriers (Rasul et al., 2023; Michel-Villarreal et al., 2023).

Threats such as plagiarism, excessive AI reliance, and error escalation (Fiialka et al., 2023), coupled with a deceptive semblance of human-like communication and precision (Castonguay et al., 2023), highlight the complexities. Other challenges include information search process dilution, educational inequalities (Rahimzadeh et al., 2023), and reduced critical thinking, originality, and academic honesty due to AI dependence (Singh et al., 2023).

A major concern is the potential for errors, hallucinations, or inconsistencies in ChatGPT responses, raising questions about its authority (Borger et al., 2023; Cooper, 2023; Ellis & Slade, 2023). Cooper (2023) warns of ChatGPT becoming an unverified epistemic authority, emphasizing the need for educator evaluation before integration into specific contexts (Ellis & Slade, 2023).

The drawbacks of using ChatGPT in education underscore the need for research evaluating its performance across academic settings. Studies, such as Currie et al. (2023), suggest that while ChatGPT-3.5 generally outperforms students in standard tests, its efficacy diminishes in more specific exams due to shallow responses lacking depth and currency (Gilson et al., 2023; Loos et al., 2023; Lower et al., 2023; Sedaghat, 2023). Hence, ChatGPT's utility diminishes in precision-dependent exercises (Gill et al., 2023).

Ethical concerns represent a significant hurdle to ChatGPT's widespread use in education. Its accessibility raises worries about potential unethical use, blurring lines between cheating and learning (Ajevski et al., 2023; Choi et al., 2023). Additionally, the inability to distinguish between AI-generated and human texts poses challenges for plagiarism detection tools, leading to false positives and negatives (Chaundhry et al., 2023; Dalalah & Dalalah, 2023).

Finally, ethical training and academic integrity are imperative for ChatGPT's responsible application (Halaweh, 2023; Jeon & Lee, 2023; Choi et al., 2023), necessitating clear policies and frameworks (Michel-Villarreal et al., 2023; Naidu & Sevnarayan, 2023). Social media discourse reflects concerns over academic integrity and the potential for deception, yet also expresses optimism for innovative assessment methods (Fütterer et al., 2023; Sullivan et al., 2023; Tlili et al., 2023).

Key factors in the educational context

A key factor in the use of ChatGPT in education is assessment. The use of such tools without detection capabilities necessitates a reconsideration of evaluative methodologies in the field of education (Ivanov & Soliman, 2023; Rasul et al., 2023). Regarding online education, ChatGPT represents a significant advancement, with the ability to transform traditional teaching and assessment methods (Naidu & Sevnarayan, 2023). Specifically, Nikolic et al.'s (2023) research identifies that online assessments and quizzes are highly influenced by ChatGPT advancements and different plugins. As advocated by Pavlik (2023), there is an urgent need to rethink how students might use ChatGPT-like tools when creating their work while preserving academic integrity. A methodological possibility is suggested by Rudolph et al. (2023b), proposing the use of flipped learning.

Furthermore, another essential element when using ChatGPT in the educational realm is the creation of the prompt, the instruction that the user inputs into the tool to get a response or generate a conversation. Depending on the prompt, the responses provided by the AI will differ (Bitzenbauer, 2023). Studies like that of Nikolic et al. (2023) expose the possibility that ChatGPT can adequately respond to many types of assessments by modifying the inputs and requests made in the tool. Likewise, research such as that of Ellis and Slade (2023) emphasizes the importance of using an iterative process to refine the responses provided by the ChatGPT tool. Hence, it is crucial to provide specific training in AI models like ChatGPT for both teachers and students (Bitzenbauer, 2023).

On the other hand, it is important to consider the knowledge area being addressed, as it may be more receptive or prone to the use of ChatGPT (Gill et al., 2023). Fiialka et al.'s (2023) research highlights areas with more prospects for the use of ChatGPT: education, journalism, and philology, in that order.

Additionally, it is important to consider the version or model of ChatGPT being used. The literature shows that ChatGPT-4 provides more categorized, synthesized, and better critical reasoning information than ChatGPT-3.5 (Karakose et al., 2023; Lee, 2023). Therefore, the advanced version achieves a performance of 76.4% in overall accuracy, while the previous model only reaches 46.8% (Oh et al., 2023). Furthermore, it is demonstrated that ChatGPT-4 has fewer errors and hallucinations (Wang et al., 2023). Therefore, we can affirm better results for ChatGPT-4 by evaluating the accuracy, relevance, and comprehensiveness of its responses, but it is also important to recognize its limitations in terms of

precision (Totlis et al., 2023). These difficulties lead chat bots like ChatGPT, BingChat, Bard, or Ernie not to have the capabilities to pass some student tests (Rudolph et al., 2023a).

Moreover, the literature identifies other key ideas to consider in the implementation of ChatGPT in the educational context: the recognition of anticipated outcomes, the selection of the appropriate degree of automation, ensuring ethical considerations, and evaluating effectiveness (Su & Yang, 2023); teacher humility, training in critical thinking, digital literacy training, and interdisciplinary teaching (Chiu, 2023); or the lack of regulation, where higher education institutions play a significant role in discussing these issues critically (Rodrigues & Rodrigues, 2023).

Furthermore, Jeon and Lee's (2023) research can illuminate the understanding of these key factors and the ways of using ChatGPT. Their study determines four roles for ChatGPT: interlocutor, content provider, teaching assistant, and evaluator. Additionally, three teaching roles: orchestrating different resources with quality pedagogical decisions, turning students into active researchers, and increasing ethical awareness of AI.

Finally, concerning the assessment of people's perception or attitude towards the use of ChatGPT, Mohammed et al.'s (2023) research stands out, describing the development, validation, and use of a tool to assess knowledge, attitude, and practice towards ChatGPT (KAP-C). Additionally, Sánchez-Ruiz et al.'s (2023) study suggests that students use this tool occasionally in academic contexts. Furthermore, it shows high confidence among students in ChatGPT, especially among males. In this line, Singh et al. (2023) show that students do not usually use ChatGPT frequently for academic purposes.

All these key factors highlight the need for quality training on the proper use of ChatGPT and similar tools for both teachers and students (Vargas-Murillo et al., 2023). Finally, it is essential to continue research on the experiences and perceptions of ChatGPT users in the field of education (Michel-Villarreal et al., 2023).

Success experiences

It is noteworthy the scarcity of articles directly referring to success experiences that contribute to enlightening the pedagogical paths that can be followed for an efficient implementation of the ChatGPT tool in the classroom.

Nevertheless, we can reference studies that may provide ideas or experiences related to the didactic

approach. In this regard, the work of Bitzenbauer (2023) stands out, who, with the aim of promoting critical thinking skills in students, proposes the following didactic sequence inspired by the think-pair-share method[1]:

Bitzenbauer (2023)

- Students generate text on a topic by asking ChatGPT (ask).
 - They analyze and evaluate the accuracy and clarity of the information (think).
 - They compare texts with peers. Different prompts yield different results (pair).
 - They review and add citations to the text by searching in scientific literature, textbooks, online resources, etc. (verify).
 - They engage in class discussions to share findings and discuss the analyzed information (share).

Another experience is presented by Borger et al. (2023) through the use of ChatGPT as a language advisor in the writing of, for example, doctoral theses. Similar to how Word highlights some detected inaccuracies, ChatGPT can point out areas for improvement in essay or thesis writing, helping students focus their thinking on these issues.

Additionally, the work of Sharma and Sharma (2023) suggests the possibility of combining two realities with great potential in the educational field, namely, the Metaverse and ChatGPT. While the Metaverse could create virtual environments for students to apply their skills and improve competencies in a safe context, ChatGPT could generate a conversational interface that mimics interaction with real people.

However, we cannot overlook the ethical concerns regarding the unethical use of ChatGPT and potential plagiarism. Thus, Choi et al. (2023) propose a way to prevent students from extensively using ChatGPT for text elaboration by employing a typology of tasks based on reflections on students' own experiences. Attempting, as Ngo (2023) suggests, to have ChatGPT used as a tool for consultation or access to information, but not with the aim of copying and pasting its responses into an academic work. Therefore, similar tools to ChatGPT should be used to initiate and inspire critical reflection rather than diminish it as if it were the sole end product of such reflection (Rahimzadeh et al., 2023).

In an effort to ensure that educational experiences are not compromised by misuse of ChatGPT, the work of Nikolic et al. (2023) is noteworthy. They highlight oral presentations as a realistic way to assess students' true competencies since ChatGPT cannot replace students in that manner. From this perspective, education should move towards more experiential and practical methodologies.

DISCUSSION AND CONCLUSIONS

The integration of AI into our daily lives is accelerating the transformative changes initiated by the digital technology revolution. OpenAI's GPT technology continues to evolve, with an expanding ecosystem of AI-powered applications accessible across various platforms. Developers are leveraging GPT through OpenAI's API, leading to a growing variety of tools and services that enhance both personal and professional tasks. As AI capabilities continue to advance, the availability and adoption of AI-driven applications are expected to increase, providing users with diverse options, ranging from free to premium solutions.

Education cannot remain indifferent to this change. Hence, the importance of works like this one that delve into the scientific evidence available today, serving as a guide for reflecting on and reconsidering the appropriateness of using this type of technology in the classroom (Pattier & Reyer, 2022).

In this critical reflection that the education sector must undertake, it is essential to consider the benefits, advantages, and opportunities of using ChatGPT in the teaching and learning process. As the literature demonstrates, there are numerous advantages to its implementation, especially in text creation (Khurma et al., 2023; Vicente-Yagüe-Jara et al., 2023), time-saving for both teachers and students (Halaweh, 2023; Wandelt et al., 2023), and obtaining ideas to solve specific situations (Fiialka et al., 2023; Zhu et al., 2023).

However, it is crucial not to forget that every new technological application also comes with a set of disadvantages, which must be considered in this debate. Significant limitations include ChatGPT's low performance in handling questions that cannot be answered superficially or generally (Currie et al., 2023; Loos et al., 2023) and the potential for ChatGPT to provide responses with errors, hallucinations, or inconsistencies (Borger et al., 2023; Cooper, 2023; Pattier, 2024). Additionally, there are significant risks such as unethical use and the possibility of undermining academic integrity through plagiarism (Ajevski et al., 2023; Chaundhry et al., 2023; Dalalah & Dalalah, 2023).

Thus, on the one hand, this revolution directly affects educational contexts intending to use ChatGPT, requiring training for both teachers and students, considering key factors such as different tool versions (Karakose et al., 2023; Lee, 2023) or the most efficient way to write prompts that will subsequently generate the chatbot's response (Bitzenbauer, 2023; Ellis & Slade, 2023). On the other hand, the impact is

widespread, and even if the decision is made not to use such tools, the evaluation of students' learning processes, especially in higher stages, must be reconsidered (Choudhary et al., 2023; Ivanov & Soliman, 2023). All of this seems to encourage the application of evaluative methodologies that are not dependent on the submission of written assignments but are more experiential and practical (Nikolic et al., 2023).

Various success experiences in using ChatGPT in education can serve as a guide and inspiration for the implementation of others, whether through the isolated use of ChatGPT (Bitzenbauer, 2023; Borger et al., 2023) or in combination with other types of tools (Sharma & Sharma, 2023). However, it is crucial to remember that the literature points towards the efficiency of implementing ChatGPT as an educational support rather than an end in itself where students copy what they find in the chat (Ngo, 2023; Rahimzadeh et al., 2023).

Finally, it is essential to reflect on the potential social inequalities that the widespread use of such tools may generate in society (Rahimzadeh et al., 2023). Not with the goal of prohibiting their use but regulating it, identifying possible gaps, and promoting projects that lead towards effective equality in the educational field.

We are experiencing a crucial moment in education that prompts us to rethink and reconsider how we conduct classes, the assessment methods, and even the suitability of incorporating technology into the teaching and learning process. This is an era in which we must rely on the scientific evidence emerging on the subject, systematically compiled in this study. Lastly, there is an urgent need for ethical training to guide and regulate the various actions taken by institutions, teachers, and students in the use of such AI tools in the educational sphere.

Limitations and future lines of research

The limitation of this study lies in the fact that it addresses an emerging and rapidly evolving topic. Additionally, only articles published in SCOPUS are considered, excluding other possible indexations.

Future lines of research should take into account other similar artificial intelligence tools in order to compare results.

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