The Integration of CHATGPT In Education: Didactic Strategies for Improving Learning

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Abstract

A systematic review was conducted on the production and publication of research papers related to ChatGPT, Education, Didactic Strategies, and Learning using the PRISMA approach. The aim was to identify the main characteristics of publications in the Scopus and WoS databases and their relevance to the proposed variables, resulting in the identification of 49 publications. Refining the results with keywords CHATGPT, EDUCATION, TEACHING STRATEGIES, and LEARNING led to 16 documents, excluding duplicates and those not meeting the analysis criteria. The identified publications were analyzed to understand the main characteristics of research projects on education using technological tools like ChatGPT, aiming to support methodologies that enhance the learning process.

Keywords: *ChatGPT, Education, Teaching Strategies, Learning*

INTRODUCTION

Exploring new learning styles today reveals how they stimulate autonomous learning among students and the education sector's efforts to prioritize these needs. The dynamism of these new teaching practices displaces traditional education mechanisms, causing a paradigm shift. Recent technological innovations have transformed several sectors, including education. The arrival of artificial intelligence, such as ChatGPT, has improved pedagogical models, enhancing student performance through technological resources.

ChatGPT, developed by OpenAI, is a chatbot specialized in dialogue, generating texts based on human natural language. Its incorporation into education aims to equip students with necessary skills to face technological advances. This innovation supports modern learning strategies, adapting to the various teaching styles each student requires. From project-based learning to collaborative learning, teachers strive to create an equitable, knowledge-focused environment. ChatGPT aligns with these needs, offering personalized learning environments, accurate communication, and tutoring.

A significant strength of ChatGPT is its ability to engage students, allowing independent interaction and exploration of educational advantages while preserving natural language. These benefits create more engaging and dynamic learning experiences, enabling students to ask questions and establish dialogues easily. ChatGPT enhances didactic strategies by promoting proactive participation, allowing students to provide feedback and deepen their understanding of topics.

This continuous interaction benefits both students and educators. ChatGPT helps teachers generate new learning plans, create proactive activities, and develop scenarios that meet collective learning needs. These strategies alleviate teachers' burdens, allowing them to focus on cultivating critical thinking skills and fostering a constant interest in acquiring new knowledge.

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GENERAL OBJECTIVE

To analyze, from a bibliometric and bibliographic perspective, the production of research papers on ChatGPT, Education, Didactic Strategies, and Learning, published in high-impact journals indexed in the Scopus and WoS databases during the period 2017-2021.

METHODOLOGY

The present research is qualitative, according to Hernández, et al., qualitative approaches correspond to the investigations that carry out the procedure of obtaining information to review and interpret the results obtained in these studies; To do this, he searched for information in the Scopus and Wos databases using the words CHATGPT, EDUCATION, TEACHING STRATEGIES AND LEARNING. (2015)

Research Design

The research design proposed for the present research was the Systematic Review that involves a set of guidelines to carry out the analysis of the collected data, which are framed in a process that began with the coding to the visualization of theories On the other hand, it is stated that the text corresponds to a descriptive narrative since it is intended to find out how the levels of the variable affect; and systematic, because after reviewing the academic material obtained from scientific journals, theories on knowledge management were analyzed and interpreted. (Strauss & Corbin, 2016) (Hernandez, Baptista, & Fernandez, 2015)

The results of this search are processed as shown in Figure 1, through which the PRISMA technique for the identification of documentary analysis material is expressed. It was taken into account that the publication was published during the period between 2017 and 2021 without distinction of country of origin of the publication, without distinction of area of knowledge, as well as any type of publication, namely: Journal Articles, Reviews, Book Chapters, Book, among others.
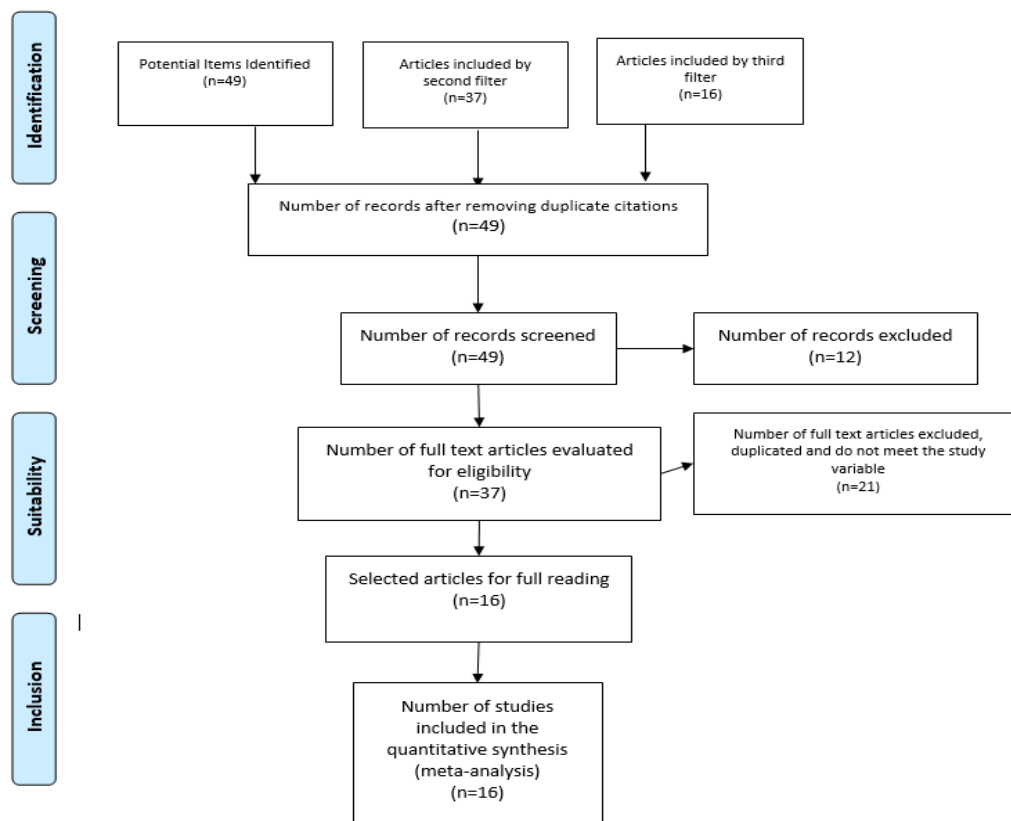

Figure 1. Flowchart of a systematic review carried out under the PRISMA technique (Moher, Liberati, Tetzlaff, Altman, & Group, 2009)

Source: Authors' own creation; Based on the proposal of the Prisma Group   (Moher, Liberati, Tetzlaff, Altman, & Group, 2009)

RESULTS

Table 1 shows the results after applying the search filters related to the methodology proposed for this research, after recognizing the relevance of each of the referenced works.

Table 1. List of articles analysed

| No.	RESEARCH TITLE	AUTHOR/YEAR	COUNTRY	TYPE OF STUDY	INDEXING
1	*Research on ChatGPT's Strategy to Promote the Digital Transformation of Education*	Yinping, Z., & Yongxin, Z. (2023, July).	CHINA	QUALITATIVE	SCOPUS
2	*Empowering Learner-Centered Instruction: Integrating ChatGPT Python API and Tinker Learning for Enhanced Creativity and Problem-Solving Skills*	Tsai, Y. C. (2023).	CHINA	QUALITATIVE	SCOPUS
3	*ChatGPT and higher education assessments: More opportunities than concerns?*	Gamage, K. A., Dehideniya, S. C., Xu, Z., & Tang, X. (2023).	UNITED KINGDOM, SRI LANKA, CHINA	QUALITATIVE	SCOPUS
4	*Roadmap for Software Engineering Education using ChatGPT*	Abdelfattah, A. M., Ali, N. A., Abd Elaziz, M., & Ammar, H. H. (2023, September).	EGYPT	QUALITATIVE	SCOPUS
5	*Active and transformative learning (ATL) in higher education in times of artificial intelligence and ChatGPT: Investigating a new value-based framework*	Lytras, M. D. (2023).	SAUDI ARABIA	QUANTITATIVE	SCOPUS
6	*Adapting to the Future: ChatGPT as a Means for Supporting Constructivist Learning Environments*	Kim, M., & Adlof, L. (2023).	UNITED STATES	QUALITATIVE	SCOPUS
7	*Enhancing outcomes, fostering values, and shaping pedagogy with ChatGPT in english learning courses: AI in two value-oriented english language courses*	Davidson, C. C. (2023).	UNITED STATES	QUALITATIVE	SCOPUS
8	*The rise of ChatGPT: Exploring its potential in medical education*	Lee, H. (2023).	SOUTH KOREA	QUANTITATIVE/QUALITATIVE	SCOPUS
9	*Exploring the potential of artificial intelligence tools in educational measurement and assessment*	Owan, V. J., Abang, K. B., Idika, D. O., Etta, E. O., & Bassey, B. A. (2023).	NIGERIA	QUALITATIVE	SCOPUS
10	*Prompting Large Language Models to Power Educational Chatbots*	Farah, J. C., Ingram, S., Spaenlehauer, B., Lasne, F. K. L., & Gillet, D. (2023, November)	SWITZERLAND	QUALITATIVE	SCOPUS

11	*ChatGPT for Education and Research: Opportunities, Threats, and Strategies*	Rahman, M. M., & Watanobe, Y. (2023).	BANGLADESH, JAPAN	QUALITATIVE	WOS
12	*USING CHATGPT IN DISTANCE LEARNING FOR BEGINNERS IN PROGRAMMING*	Sisilitsyn, I.M. and Osadchyi, VV (2023)	UKRAINE	QUALITATIVE	WOS
13	*Generative artificial intelligence (ChatGPT): Implications for management educators*	Ratten, V., & Jones, P. (2023).	AUSTRALIA, UNITED KINGDOM	QUALITATIVE	WOS
14	*ChatGPT for teachers: Practical examples for utilizing artificial intelligence for educational purposes*	Mondal, H., Marndi, G., Behera, J. K., & Mondal, S. (2023).	INDIA	QUALITATIVE	WOS
15	*Educational Design Principles of Using AI Chatbot That Supports Self-Regulated Learning in Education: Goal Setting, Feedback, and Personalization*	Chang, D. H., Lin, M. P. C., Hajian, S., & Wang, Q. Q. (2023).	CANADA	QUALITATIVE/QUANTITATIVE	WOS
16	*ChatGPT for good? On opportunities and challenges of large language models for education*	Kasneci, E., Seßler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., ... & Kasneci, G. (2023)	GERMANY	QUALITATIVE	WOS

Source: Authors' own creation

Co-occurrence of Words

Figure 2 shows the relationship between the keywords used to search for the study material for the systematic analysis proposed for this research.
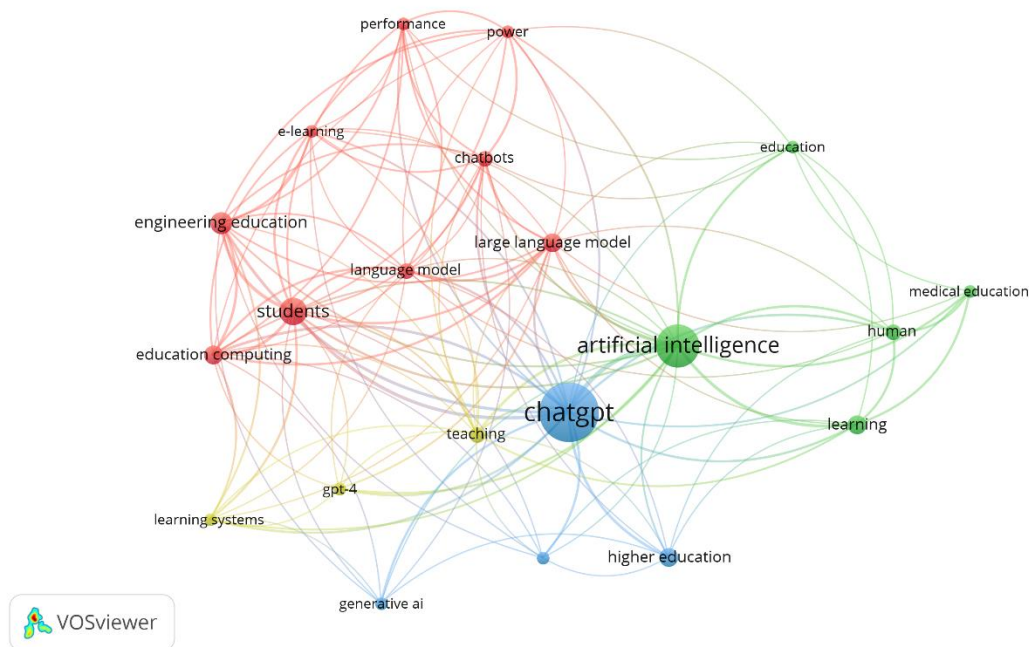
Figure 2. Co-occurrence of keywords.

Source: Authors' own creation

Figure 2 shows the most frequently used keywords and their correlation with research on ChatGPT, Education, Didactic Strategies, and Learning. Artificial Intelligence is the central focus of the research identified, directly related to ChatGPT, Learning Analysis, Higher Education, Generation AI, Students, Virtual Learning Environments, Educational Engineering, among others, confirming the relevance of the analyzed data in meeting the proposed objective.

In this educational revolution, technology integration has become a turning point. Digital tools and platforms offer personalized learning experiences, real-time feedback, and global collaboration. One technological innovation, in particular, stands out for its potential to reshape education: ChatGPT. This model can generate personalized content based on individual student needs, addressing specific learning gaps and improving learning efficiency. It ensures each learner progresses at their own pace, reinforcing concepts before advancing.

As we explore the dynamic intersection of teaching strategies and ChatGPT integration, it is clear we are on the threshold of a transformative era. The synergy between innovative teaching approaches and advanced language models foreshadows a future where education is a dynamic, interactive journey that prepares students for the challenges and opportunities of the 21st century.

DISCUSSION

The purpose of this article was to analyze the contributions of authors through their publications on the usability problems of ChatGPT, Education, Didactic Strategies, and Learning in high-impact journals indexed in Scopus and WoS databases during 2017-2021 by authors affiliated with Latin American institutions. The identified publications conducted research at different levels, contributing to the generation of new knowledge on the proposed variables.

For instance, the article "Research on the strategy of ChatGPT to promote the digital transformation of education" classifies the value of digital transformation in education, aiming to improve teaching quality, promote educational equity, innovate educational models, optimize resource allocation, and cultivate lifelong learning awareness. It explores how ChatGPT can enhance student learning, assist teachers, and improve

communication, among other benefits. Strategic suggestions include improving students' skills and information literacy, enhancing teachers' professional skills, and strengthening technology research and development.

Another contribution is the article "Exploring the potential of artificial intelligence tools in educational measurement and evaluation," which discusses AI tools in educational assessment. It covers the integration of large language AI models into classroom assessments, addressing various aspects such as test development, administration, scoring, and evaluation. It also highlights the role of teachers in AI-based assessments and the challenges and benefits of using AI in educational evaluation.

The article "Driving large language models to power educational chatbots" addresses the technological and pedagogical challenges of integrating AI technologies in learning contexts. It proposes an architecture to support educational chatbots and presents a case study involving undergraduate software engineering students. The qualitative insights suggest learners appreciated the chatbot, indicating potential strategies for optimizing the integration of large language models into educational scenarios (Yinping & Yongxin, 2023; Valentine Joseph Owan, 2023; Juan Carlos Farah, 2023).

CONCLUSIONS

This review article concludes by emphasizing the importance of understanding the current state of the bibliography published in databases such as Scopus and WoS on the usability problems of ChatGPT, Education, Didactic Strategies, and Learning during 2017-2021. The implementation of digital tools in academic training has positively impacted education. However, it is crucial to highlight the challenges identified by the cited authors, as recorded in this article.

Globalization has transformed how we live and interact, with the technological era bringing new forms of communication and systems of change. The education sector has witnessed significant changes in teaching and learning systems, reflected in new learning styles that address the constant need to learn more efficiently. The integration of teaching strategies leveraging technologies like ChatGPT opens new avenues for personalized and adaptive learning. These tools can address individual student needs, facilitate content delivery, improve learning rhythms, and enhance academic performance.

The conversational nature of these technologies allows students to engage in meaningful dialogues, ask questions, seek clarification, and explore concepts conversationally. This approach helps develop critical thinking and problem-solving skills, enabling students to articulate ideas and defend their knowledge. Integrating such strategies bridges the gap between traditional classroom environments and the evolving digital landscape, exposing students to real-world technology applications and preparing them for a digital society. This exposure enhances technological literacy and instills adaptability and resilience.

In conclusion, incorporating new technologies is feasible and beneficial. Effective teaching strategies involve creating collaborative learning environments that promote equity, improve communication, and foster a holistic educational experience. For successful implementation, education professionals need training to equip teachers with the necessary resources, ensuring the effective and sustainable integration of technology to maximize its positive impact on student learning.

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