Remittances Review
June 2023
Volume: 8, No: 4, pp. 2538 - 2548
ISSN: 2059-6588 (Print) | ISSN: 2059-6596 (Online)

Received: 11 November 2022 Accepted: 28 March, 2023
DOI: https://doi.org/10.33182/rr.v8i4.175

EXPLORING LEARNING STYLES IN CHATGPT INTERACTION: AN ANALYSIS OF HOW AI-BASED LANGUAGE MODELS ADAPT TO DIFFERENT LEARNING PROFILES

Silvia karina garcia pisconte[1], Gino gustavo garcia pisconte[2], Ana luisa bravo quintana[3], Nathia erika castro vilcapuma[4]

Abstract

A documentary review was carried out on the production and publication of research papers related to the study of the variable CHATGPT, EDUCATION AND LEARNING. The purpose of the bibliometric analysis proposed in this document was to know the main characteristics of the volume of publications registered in the Scopus database during the first semester of 2023, achieving the identification of 149 publications. The information provided by this platform was organized through graphs and figures categorizing the information by Year of Publication, Country of Origin, Area of Knowledge and Type of Publication. Once these characteristics have been described, the position of different authors towards the proposed theme is referenced through a qualitative analysis. Among the main findings made through this research, it is found that the United States with 44 publications with the highest scientific production registered in the name of authors affiliated with institutions in that country. The Area of Knowledge that made the greatest contribution to the construction of bibliographic material referring to the study of CHATGPT, EDUCATION AND LEARNING was Social Sciences with 91 published documents, and the Type of Publication most used during the period indicated above were Journal Articles with 60% of the total scientific production.

Keywords: *chatgpt, education, learning.*

1. Introduction

Learning style has long been a topic of interest in education because it affects how people process, retain, and assimilate new information. Learning styles refer to people's personal preferences and methods of acquiring knowledge. Over the years several theories and models have emerged to

[1] Universidad Privada Autónoma de Ica – Perú Docente universitario Doctora en Gestión Pública y Gobernabilidad
ORCID 0000-0001-9092-7587 karina.garcia@autonomadeica.edu.pe
[2] Universidad Tecnológica el Perú Docente universitario Magister en MBA ORCID: 0000-0001-8093-7669
C22777@utp.edu.pe
[3] Universidad Privada Autónoma de Ica – Perú Docente universitario Doctora en Gestión Pública y Gobernabilidad
ORCID 0000-0002-7454-6706 ana.bravo@autonomadeica.edu.pe
[4] Universidad Privada San Juan Bautista Docente universitario Doctora en ciencias de la Educación
ORCID 0000-0002-9546-8663 nathia.castro@upsjb.edu.pe

classify and understand these styles, such as Neil Fleming's VARK (Visual, Auditory, Reading/Writing, Kinesthetic) model and Kolb's experiential learning model.

At the same time, advances in artificial intelligence have enabled the development of powerful language models like ChatGPT that can interact with users in a consistent and context-sensitive way. These models have proven their ability to help with a variety of tasks, from generating text to answering questions and making recommendations.

Interacting with AI-based language models like ChatGPT provides unique opportunities to explore and adapt to users' different learning styles. These models can adapt the way information is presented and communicated according to user preferences (visual, auditory, reading/writing or kinesthetic). For users with visual preferences, the Chatgpt model can generate answers in the form of diagrams, tables, or concept maps. For hearing users, you can provide more detailed verbal explanations and even read relevant content aloud. Users who prefer to learn by reading and writing can benefit from detailed and well-structured text responses. For kinesthetic users, the model can suggest real-world activities or practical examples that allow them to experience the content in tangible ways.

The adaptation of language models to learning styles depends on the model's ability to analyze and understand user preferences. This can be achieved by continuously interacting with users, observing their choices and reactions, and using machine learning techniques to identify their behavior patterns. These models can include real-time feedback capabilities so users can indicate what types of responses are most useful to them. In addition, they can learn and adjust their communication style based on the feedback users provide in previous sessions.

Finally, interacting with AI-based language models, such as Chatgpt, provides an excellent opportunity to tailor communication and content presentation to individual learning styles. As these models continue to evolve, they can play an important role in personalizing education and enhancing each individual's learning experience by effectively delivering information tailored to each individual's unique preferences. However, it is important to note that while these models can be useful, they do not replace the richness and variety of traditional teaching methods. For this reason, this article seeks to describe the main characteristics of the compendium of publications indexed in the Scopus database related to the variables CHATGPT, EDUCATION AND LEARNING, as well. As the description of the position of certain authors affiliated with institutions, during the period during the first half of 2023.

2. General Objective

Analyze from a bibliometric and bibliographic perspective, the elaboration and publication of research works in high-impact journals indexed in the Scopus database on the variables CHATGPT, EDUCATION and LEARNING during the first semester of the year 2023.

3. Methodology

This article is carried out through a mixed orientation research that combines the quantitative and qualitative method.

On the one hand, a quantitative analysis of the information selected in Scopus is carried out under a bibliometric approach of the scientific production corresponding to the study CHATGPT, EDUCATION and LEARNING On the other hand, examples of some research works published in the area of study indicated above are analyzed from a qualitative perspective, starting from a bibliographic approach that allows describing the position of different authors against the proposed topic. It is important to note that the entire search was performed through Scopus, managing to establish the parameters referenced in *Figure 1*.

3.1. Methodological design

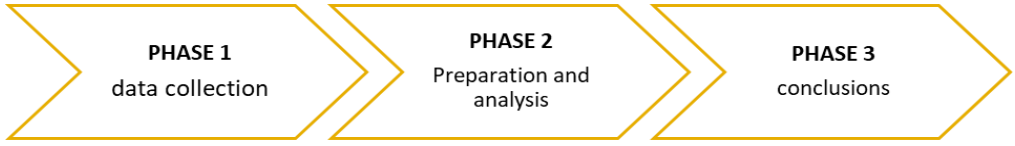

Figure 1. *Methodological design*

Source: Authors.

3.1.1 Phase 1: Data collection

Data collection was executed from the Search tool on the Scopus website, where 149 publications were obtained from the choice of the following filters:

- TITLE-ABS-KEY (learning, AND chatgpt, AND education)
- Published documents whose study variables are related to the study of CHATGPT, EDUCATION and LEARNING.
- Limited to the first half of 2023.
- Without distinction of country of origin
- Without distinction of area of knowledge.
- Regardless of type of publication.

3.1.2 Phase 2: Construction of analysis material

The information collected in Scopus during the previous phase is organized and subsequently classified by graphs, figures and tables as follows:

- Co-occurrence of words.
- Country of origin of the publication.
- Area of knowledge.
- Type of publication.

3.1.3 Phase 3: Drafting of conclusions and outcome document

In this phase, we proceed with the analysis of the results previously yielded resulting in the determination of conclusions and, consequently, the obtaining of the final document.

4. Results

4.1 Co-occurrence of words

Figure 2 shows the co-occurrence of keywords found in the publications identified in the Scopus database.

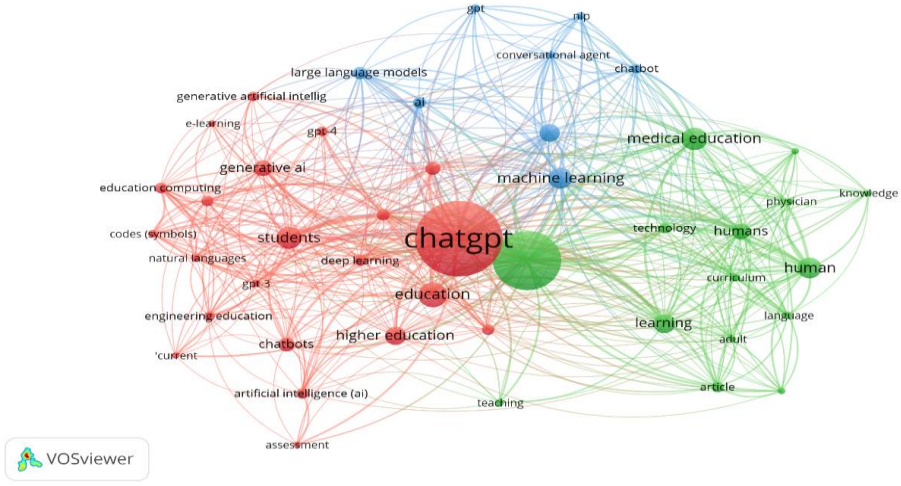

Figure 2. *Co-occurrence of words*

Source: Own elaboration (2023); based on data exported from Scopus.

Chatgpt was the most frequently used keyword within the studies identified through the execution of Phase 1 of the Methodological Design proposed for the development of this article. Education is also among the most frequently used variables, associated with variables such as Language Models, Artificial Intelligence, ICT, Machine Learning, Higher Education, Online Education. In the era of artificial intelligence, interaction with language models such as ChatGPT is changing the way people access information and learn new concepts. ChatGPT serves as an example of an AI-based language model that can play an important role in learning to suit different learning styles. AI-based language models adapt more flexibly to different learning styles than traditional teaching methods.

4.2 Distribution of scientific production by country of origin

Figure 3 shows how scientific production is distributed according to the country of origin of the institutions to which the authors are affiliated.

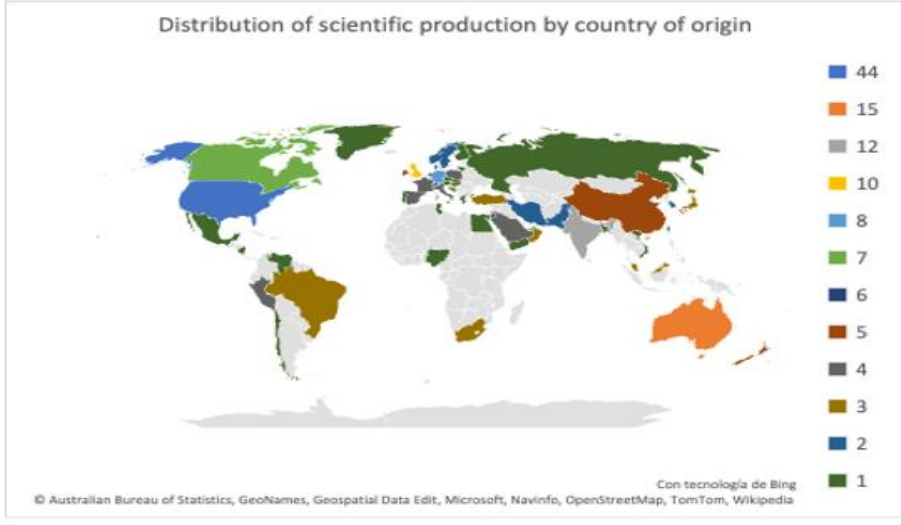

Figure 3. *Distribution of scientific production by country of origin.*

Source: Own elaboration (2023); based on data provided by Scopus.

Within the distribution of scientific production by country of origin, records from institutions were taken into account, establishing the United States, as the country of that community, with the highest number of publications indexed in Scopus during the first half of 2023, with a total of 44 publications in total. In second place, Australia with 15 scientific papers, and India ranking third presenting to the scientific community, with a total of 12 papers among which is the article titled "A comprehensive AI policy education framework for university teaching and learning"

This study aims to develop an AI education policy for higher education by examining the perceptions and implications of generative text AI technologies. Data were collected from 457 students and 180 faculty and staff from various disciplines at Hong Kong universities, using both quantitative and qualitative research methods. Based on the findings, the study proposes an AI green education policy framework to address the multifaceted implications of integrating AI into university teaching and learning. This framework is organized into three dimensions: pedagogical, governance and operational. The pedagogical dimension focuses on the use of AI to improve teaching and learning outcomes, while the governance dimension addresses issues related to privacy, security and accountability. The Operational dimension addresses infrastructure and training issues. (Chan, 2023)

4.3 Distribution of scientific production by area of knowledge

Figure 4 shows the distribution of the elaboration of scientific publications from the area of knowledge through which the different research methodologies are implemented.

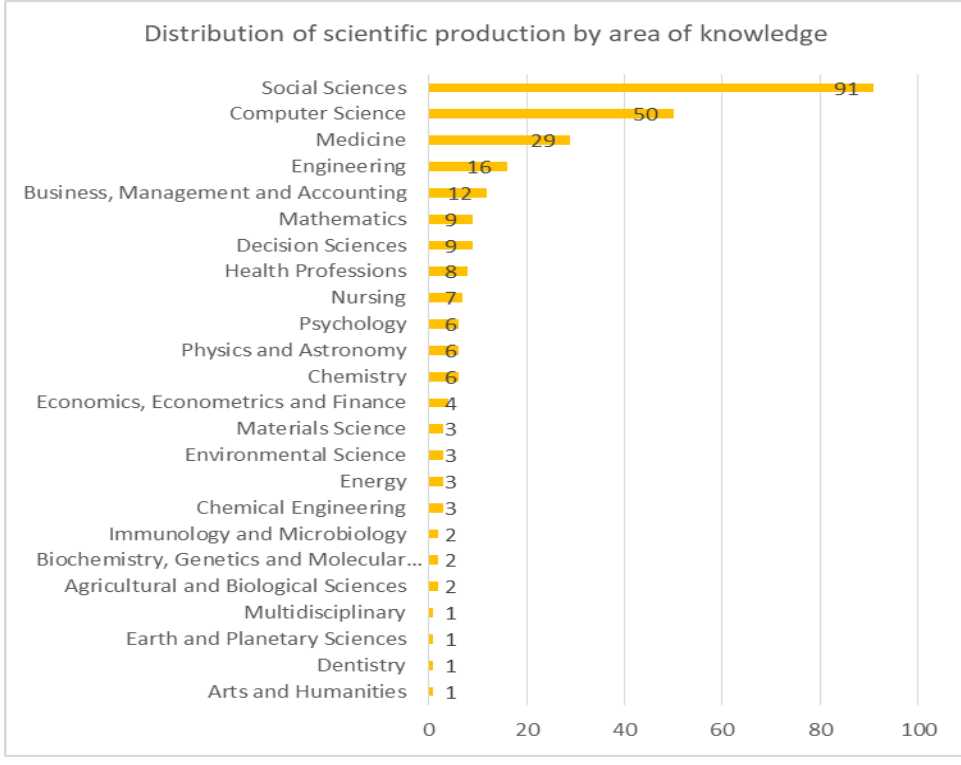

Figure 4. *Distribution of scientific production by area of knowledge.*

Source: Own elaboration (2023); based on data provided by Scopus

Social Sciences was the area of knowledge with the highest number of publications registered in Scopus with a total of 91 documents that have based their variable methodologies CHATGPT, EDUCATION AND LEARNING. In second place, Computer Science with 50 articles and Medicine in third place with 29. The above can be explained thanks to the contribution and study of different branches, the article with the greatest impact was registered by the Social Sciences area entitled "Nursing education in the era of Chatbots driven by artificial intelligence (AI-Chatbots): Are we ready?" This article discusses the challenges and implications of AI-powered chatbots in nursing education. Chat Generative Pre-trained Transformer (ChatGPT) is an AI-Chatbot that can engage in detailed dialogue and pass qualification tests in various fields. It can be applied for writing course materials and administrative paperwork. Students can use it for self-paced personalized learning. AI-Chatbot technology can be applied in problem-based learning for hands-on experiences. There are concerns about over-reliance on technology, including plagiarism issues and limited critical thinking skills. Educators should provide clear guidelines on appropriate use and emphasize the importance of critical thinking and proper citation. Educators should proactively adjust their curricula and pedagogy. AI-Chatbot technology could transform the nursing profession by assisting and streamlining administrative tasks, allowing nurses to focus on patient care. The use of AI-Chatbots to help patients socially and for therapeutic purposes in mental health holds promise for improving patients' well-being and potentially alleviating healthcare worker shortages and burnout.(Tam, 2023)

4.4 Type of publication

In the following graph, you will observe the distribution of the bibliographic finding according to the type of publication made by each of the authors found in Scopus.

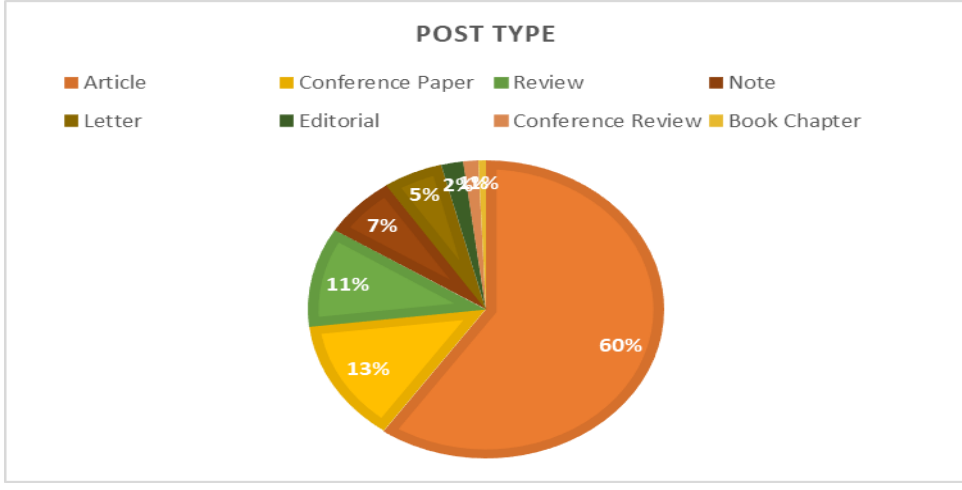

Figure 5. *Type of publication.*

Source: Own elaboration (2023); based on data provided by Scopus.

The type of publication most frequently used by the researchers referenced in the body of this document was entitled Journal Articles with 60% of the total production identified for analysis, followed by Session Paper with 13%. Journal are part of this classification, representing 11% of the research papers published during the period 2020-2022 in journals indexed in Scopus. In this last category, the one entitled "A comparison of articles generated by ChatGPT with articles written by humans" stands out, this article aims to buy the accuracy and quality of several academic articles generated by ChatGPT with those written by human authors. Material and methods: We conducted a study to evaluate the accuracy of radiology articles generated by ChatGPT comparing them with published or written articles and under review. These were analyzed independently by two trained and rated musculoskeletal radiologists from 1 to 5 (1 being bad and inaccurate and 5 being excellent and accurate).

Results: In total, 4 of the 5 articles written by ChatGPT were significantly inaccurate with fictitious references. One of the articles was well written, with a good introduction and discussion; however, all references were fictitious. Conclusion: ChatGPT can generate coherent research articles, which in the initial review may closely resemble authentic articles published by academic researchers. However, all the articles we evaluated were factually inaccurate and had fictitious references. However, it is worth noting that the articles generated may appear authentic to an untrained reader.(Ariyaratne, 2023)

5. Conclusions

Through the bibliometric analysis carried out in the present research work, it was established that the United States was the country with the largest number of records published for the variables CHATGPT, EDUCATION AND LEARNING. WITH A TOTAL OF 44 PUBLICATIONS IN THE Scopus database. Similarly, it was established that the application of theories framed in the area of Social Sciences, were used more frequently in the impact generated by interactions with ChatGPT and other language models based on AI, since it gives us valuable information about the diversity of learning styles and how to adapt these models to meet individual preferences. Although AI models serve many purposes, it's worth noting that they're not a one-size-fits-all solution. Effective learning still depends on a combination of factors, including learner motivation, prior knowledge, and the complexity of the subject. AI models can serve as valuable tools to facilitate learning, but they should complement, not replace, traditional teaching methods. In addition, ethical considerations regarding privacy, data security, and potential biases in AI-generated content must also be considered. Since these models are tailored to individual users, you are responsible for ensuring that the information provided is accurate, unbiased, and respects users' privacy. Essentially, interactions between users and language models like ChatGPT emphasize the dynamic nature of learning and AI's ability to adapt and enhance the learning

experience. By leveraging AI's strengths while recognizing its limitations and ethical implications, we can create more inclusive and effective learning environments for a wide range of students.

References

Ariyaratne, S. I. (2023). *A comparison of articles generated by ChatGPT with articles written by humans.* United Kingdom.

Cascella, M. M. (2023). *Evaluation of the viability of ChatGPT in healthcare: an analysis of multiple clinical and research scenarios.* Italy.

Chan, C. K. (2023). *A comprehensive AI policy education framework for university teaching and learning.* HONG KONG.

Sevgi, U. T. (2023). *The role of an open artificial intelligence platform in modern neurosurgical education: a preliminary study.* Turkey.

Tam, W. H. (2023). *Nursing Education in the Age of AI-Powered Chatbots: Are We Ready?* SINGAPORE.

Tlili, A. S. (2023). *And if the devil is my guardian angel: ChatGPT as a case study of the use of chatbots in education.* China.

Cascella, M. M. (2023). *Evaluation of the viability of ChatGPT in healthcare: an analysis of multiple clinical and research scenarios.* Italy.

Sevgi, U. T. (2023). *The role of an open artificial intelligence platform in modern neurosurgical education: a preliminary study.* Turkey.

Tlili, A. S. (2023). *And if the devil is my guardian angel: ChatGPT as a case study of the use of chatbots in education.* China.

Ahn, C. (2023). Exploring ChatGPT for information of cardiopulmonary resuscitation. Resuscitation, 185 doi:10.1016/j.resuscitation.2023.109729

Ajevski, M., Barker, K., Gilbert, A., Hardie, L., & Ryan, F. (2023). ChatGPT and the future of legal education and practice. Law Teacher, doi:10.1080/03069400.2023.2207426

Al Ghatrifi, M. O. M., Al Amairi, J. S. S., & Thottoli, M. M. (2023). Surfing the technology wave: An international perspective on enhancing teaching and learning in accounting. Computers and Education: Artificial Intelligence, 4 doi:10.1016/j.caeai.2023.100144

Bahrini, A., Khamoshifar, M., Abbasimehr, H., Riggs, R. J., Esmaeili, M., Majdabadkohne, R. M., & Pasehvar, M. (2023). ChatGPT: Applications, opportunities, and threats. Paper presented at the 2023 Systems and Information Engineering Design Symposium, SIEDS 2023, 274-279. doi:10.1109/SIEDS58326.2023.10137850 Retrieved from www.scopus.com

Bauer, E., Greisel, M., Kuznetsov, I., Berndt, M., Kollar, I., Dresel, M., . . . Fischer, F. (2023). Using natural language processing to support peer-feedback in the age of artificial intelligence: A cross-disciplinary framework and a research agenda. British Journal of Educational Technology, doi:10.1111/bjet.13336

Bearman, M., & Ajjawi, R. (2023). Learning to work with the black box: Pedagogy for a world with artificial intelligence. British Journal of Educational Technology, doi:10.1111/bjet.13337

Bender, S. M. (2023). Coexistence and creativity: Screen media education in the age of artificial intelligence content generators. Media Practice and Education, doi:10.1080/25741136.2023.2204203

Berger, U., & Schneider, N. (2023). How ChatGPT will change research, education and healthcare? [Wie wird ChatGPT Forschung, Lehre und Gesundheitsversorgung verändern?] PPmP Psychotherapie Psychosomatik Medizinische Psychologie, 73(3), 159-161. doi:10.1055/a-2017-8471

Busch, F., Adams, L. C., & Bressem, K. K. (2023). Biomedical ethical aspects towards the implementation of artificial intelligence in medical education. Medical Science Educator, doi:10.1007/s40670-023-01815-x

Cascella, M., Montomoli, J., Bellini, V., & Bignami, E. (2023). Evaluating the feasibility of ChatGPT in healthcare: An analysis of multiple clinical and research scenarios. Journal of Medical Systems, 47(1) doi:10.1007/s10916-023-01925-4

Chaudhry, I. S., Sarwary, S. A. M., El Refae, G. A., & Chabchoub, H. (2023). Time to revisit existing Student's performance evaluation approach in higher education sector in a new era of ChatGPT — A case study. Cogent Education, 10(1) doi:10.1080/2331186X.2023.2210461

Choi, E. P. H., Lee, J. J., Ho, M. -., Kwok, J. Y. Y., & Lok, K. Y. W. (2023). Chatting or cheating? the impacts of ChatGPT and other artificial intelligence language models on nurse education. Nurse Education Today, 125 doi:10.1016/j.nedt.2023.105796

Collins, J. E. (2023). Policy solutions: Policy questions for ChatGPT and artificial intelligence. Phi Delta Kappan, 104(7), 60-61. doi:10.1177/00317217231168266

Cooper, G. (2023). Examining science education in ChatGPT: An exploratory study of generative artificial intelligence. Journal of Science Education and Technology, 32(3), 444-452. doi:10.1007/s10956-023-10039-y

Corsello, A., & Santangelo, A. (2023). May artificial intelligence influence future pediatric research?—The case of ChatGPT. Children, 10(4) doi:10.3390/children10040757

Cotton, D. R. E., Cotton, P. A., & Shipway, J. R. (2023). Chatting and cheating: Ensuring academic integrity in the era of ChatGPT. Innovations in Education and Teaching International, doi:10.1080/14703297.2023.2190148

Crawford, J., Cowling, M., & Allen, K. -. (2023). Leadership is needed for ethical ChatGPT: Character, assessment, and learning using artificial intelligence (AI). Journal of University Teaching and Learning Practice, 20(3) doi:10.53761/1.20.3.02

Crawford, J., Cowling, M., Ashton-Hay, S., Kelder, J. -., Middleton, R., & Wilson, G. S. (2023). Artificial intelligence and authorship editor policy: ChatGPT, bard bing AI, and beyond. Journal of University Teaching and Learning Practice, 20(5) doi:10.53761/1.20.5.01

Currie, G. M. (2023). Academic integrity and artificial intelligence: Is ChatGPT hype, hero or heresy? Seminars in Nuclear Medicine, doi:10.1053/j.semnuclmed.2023.04.008

Curtis, N. (2023). To ChatGPT or not to ChatGPT? the impact of artificial intelligence on academic publishing. Pediatric Infectious Disease Journal, 42(4), 275. doi:10.1097/INF.0000000000003852

Dalalah, D., & Dalalah, O. M. A. (2023). The false positives and false negatives of generative AI detection tools in education and academic research: The case of ChatGPT. International Journal of Management Education, 21(2) doi:10.1016/j.ijme.2023.100822

Day, T. (2023). A preliminary investigation of fake peer-reviewed citations and references generated by ChatGPT. Professional Geographer, doi:10.1080/00330124.2023.2190373

Dergaa, I., Chamari, K., Zmijewski, P., & Saad, H. B. (2023). From human writing to artificial intelligence generated text: Examining the prospects and potential threats of ChatGPT in academic writing. Biology of Sport, 40(2), 615-622. doi:10.5114/BIOLSPORT.2023.125623

DuBose, J., & Marshall, D. (2023). AI in academic writing: Tool or invader. Public Services Quarterly, 19(2), 125-130. doi:10.1080/15228959.2023.2185338

Dwivedi, Y. K., Kshetri, N., Hughes, L., Slade, E. L., Jeyaraj, A., Kar, A. K., . . . Wright, R. (2023). "So what if ChatGPT wrote it?" multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. International Journal of Information Management, 71 doi:10.1016/j.ijinfomgt.2023.102642

Eager, B., & Brunton, R. (2023). Prompting higher education towards AI-augmented teaching and learning practice. Journal of University Teaching and Learning Practice, 20(5) doi:10.53761/1.20.5.02

Eggmann, F., Weiger, R., Zitzmann, N. U., & Blatz, M. B. (2023). Implications of large language models such as ChatGPT for dental medicine. Journal of Esthetic and Restorative Dentistry, doi:10.1111/jerd.13046

Ellaway, R. H., & Tolsgaard, M. (2023). Artificial scholarship: LLMs in health professions education research. Advances in Health Sciences Education, doi:10.1007/s10459-023-10257-4

Emenike, M. E., & Emenike, B. U. (2023). Was this title generated by ChatGPT? considerations for artificial intelligence text-generation software programs for chemists and chemistry educators. Journal of Chemical Education, 100(4), 1413-1418. doi:10.1021/acs.jchemed.3c00063