Exploring The Implications And Opportunities Of The Transformation Of University Modalities With The Incorporation Of Chatgpt In Higher Education

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Abstract

A documentary review was carried out on the production and publication of research papers related to the study of the variables ChatGPT, University Modalities and Higher Education. 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 year 2023, achieving the identification of 71 publications. The information provided by this platform was organized through graphs and figures, categorizing the information by Country of Origin, Area of Knowledge and Type of Publication. Once these characteristics have been described, the position of different authors on the proposed topic is referenced through a qualitative analysis. Among the main findings made through this research, the United States with 13 publications were the countries with the highest scientific production registered in the name of authors affiliated with institutions in that nation. The Area of Knowledge that made the greatest contribution to the construction of bibliographic material related to the study of ChatGPT, University Modalities and Higher Education was Social Sciences with 53 publications, which were presented through theories associated with the area of Computer Science, and the most used Publication Type during the period indicated above were Journal Articles with 73% of the total scientific production.

Keywords: ChatGPT, University Modalities, Higher Education.

1. Introduction

In a world of constant change and the presence of new technologies, which have marked an era of new advances and new development systems. Its presence has led different economic systems to change the way they have been interacting with each other, leading to a constant and long-term transformation. U[1]niversities, on the other hand, an extremely important educational sector, is not exempt from presenting changes, in a world where globalization plays an important role, the traditional pedagogical models of this sector have been presenting various changes, the presence of artificial intelligence by the hand of ChatGPT contributes an axis of changes and opportunities for universities which promote a more dynamic environment,

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Able to reshape the way students interact with academic content, instructors disseminate information, and educational institutions adapt to the demands of the digital age.

Traditional university modalities have often been characterized by lectures, textbooks, and classroom discussions. ChatGPT introduces dynamic change by augmenting these traditional methods with its conversational capabilities. The algorithms presented by this new innovation is its ability to generate texts based on natural language, this would allow analyzing, understanding and similar texts in more fluid and coherent ways. These benefits will allow us to face the difficulties presented by universities, with the arrival of different learning styles, this tool would allow students to adapt to these styles, improve learning experiences and encourage autonomous learning, this being a catalyst for change, allowing endless possibilities to this educational sector.

ChatGPT has the quality of being able to serve as a virtual tutor, this would allow it to address the high demand of students who require assistance in different areas around their career. Allowing not only a personalized approach for each student, but also looking for students to take advantage of these resources and take their learning methodologies much beyond their academic limits offered by the face-to-face environment. "How Does Generative AI Impact Students' Creativity?" This tool, hand in hand with teachers, can exploit digital interactions and provide online courses in an interactive way, creating new areas for teaching and offering harmonious and synchronized communication, creating a more flexible and much more adaptive teaching horizon. (Habib, 2023)

The incorporation of ChatGPT into university modalities generates a large number of implications, both beneficial and challenging. The innumerable benefits of being able to incorporate this tool in universities are impeccable, ranging from closing geographical gaps that would allow many students around the world to have quality education for a global audience. In addition, the generation of texts instantaneously would improve the interaction between students and educators, which fosters a much more collaborative environment. Likewise, this arrival in the education sector generates concerns which are related to privacy, ethics and the possibility of an excessive dependence on these AI technologies. As universities incorporate these technologies into their educational frameworks, strong ethical guidelines, data security measures, and transparent policies are needed to ensure the responsible use of AI. Striking the right balance between benefits and challenges is crucial to harnessing ChatGPT's full potential in reshaping education. 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, University Modalities and Higher Education, as well. Such as the description of the position of certain authors affiliated with institutions, during the period during the year 2023.

2. General Objective

To analyze, from a bibliometric and bibliographic perspective, the preparation and publication of research papers in high-impact journals indexed in the Scopus database on the variables ChatGPT, University Modalities and Higher Education during the year 2023.

3. Methodology

This article is carried out through a research with a mixed orientation 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,

University Modalities and Higher Education. On the other hand, examples of some research works published in the area of study mentioned above are analyzed from a qualitative perspective, based on a bibliographic approach that allows describing the position of different authors on the proposed topic. It is important to note that the entire search was carried out through Scopus, managing to establish the parameters referenced in Figure 1.
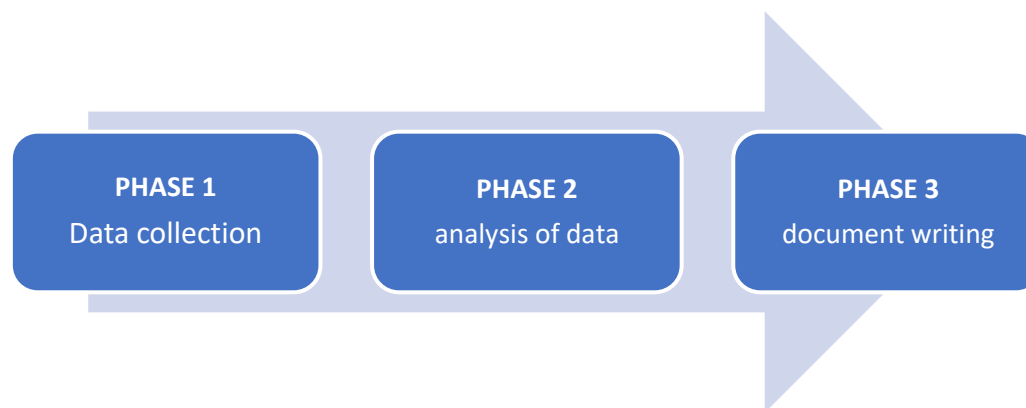
3.1. Methodological design

Figure 1. Methodological design
Source: Authors.

3.1.1 Phase 1: Data collection

Data collection was carried out from the Search tool on the Scopus website, where 71 publications were obtained from the following filters:

TITLE-ABS-KEY (chatgpt, AND education, AND pedagogical AND potential)

- Published documents whose study variables are related to the study of the variables ChatGPT, University Modalities and Higher Education.
- Limited to the year 2023.
- Without distinction of country of origin.
- Without distinction of area of knowledge.
- No distinction of type of publication.

3.1.2 Phase 2: Construction of analytical material

The information collected in Scopus during the previous phase is organized and then 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, the results of the previous results are analysed, resulting in the determination of conclusions and, consequently, the obtaining of the final document.

4. Results

4.1 Co-occurrence of words

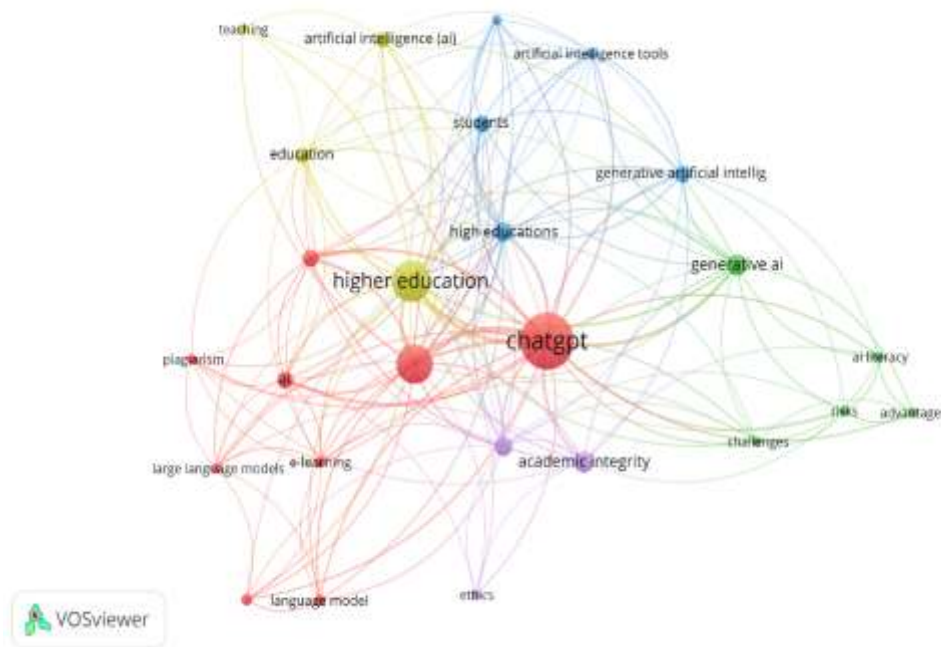Figure 2 shows the co-occurrence of keywords found in the publications identified in the Scopus database.

Figure 2. Co-occurrence of words
Source: Authors' 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. Higher Education is among the most frequently used variables, associated with variables such as Academic Intelligence, Students, Education, Artificial Intelligence, Natural Language, E-Learning, Teachers. From the above, it is striking that the transformative role of ChatGPT in university modalities opens up a field of opportunities for innovation in education. Beyond its application in traditional academic settings, ChatGPT can be used in the development of intelligent tutoring systems, immersive virtual classrooms, and adaptive learning platforms. Collaborations between AI researchers, educators, and edtech developers can lead to the creation of customized solutions that meet the diverse needs of students, making education more inclusive and engaging. In addition, ChatGPT's integration with emerging technologies such as virtual reality and augmented reality has the potential to create immersive learning experiences, transcending the limitations of physical classrooms. By taking advantage of these opportunities, universities can stay at the forefront of educational advancements, preparing students for a future where AI is an integral part of the learning process.

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.
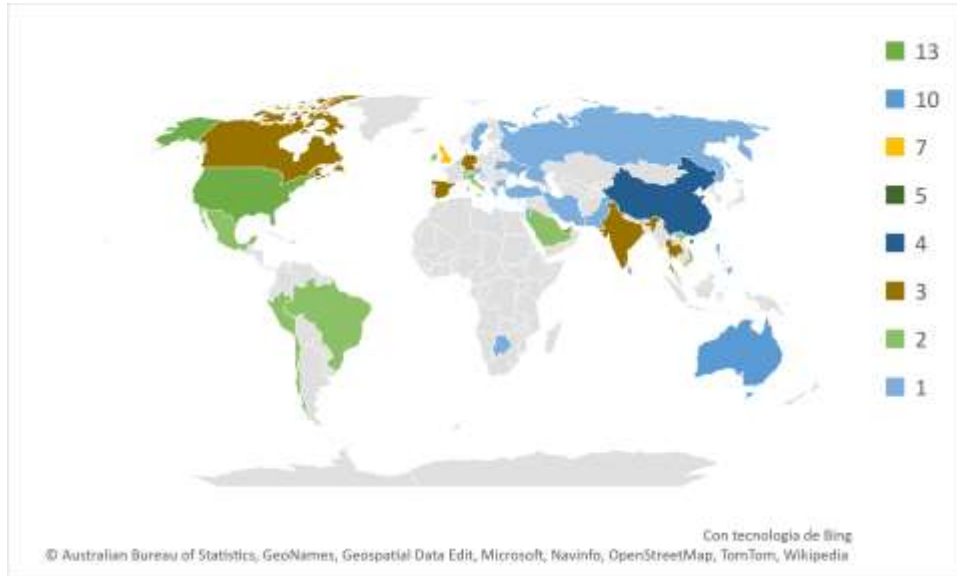
Figure 3. Distribution of scientific production by country of origin.
Source: Authors' own elaboration (2023); based on data provided by Scopus.

Within the distribution of scientific production by country of origin, registrations 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 2023 period, with a total of 13 publications in total. In second place, Australia with 10 scientific papers, and the United Kingdom occupying third place presenting to the scientific community, with a total of 7 papers among which is the article titled "Leveraging ChatGPT to improve critical thinking skills" This article presents a study conducted at Georgia Gwinnett College (GGC) to explore the use of ChatGPT, A large language model, to foster critical thinking skills in higher education. The study implemented a ChatGPT-based activity in introductory chemistry courses, where students interacted with ChatGPT in three stages: account setup and orientation, essay creation, and result review and validation. The results showed significant improvements in students' confidence in asking interesting questions, analyzing information, and understanding complex concepts. Students reported that ChatGPT provided diverse perspectives and challenged their current ways of thinking. They also expressed increased use of ChatGPT to improve critical thinking skills and their willingness to recommend it to others. However, challenges included low-quality student feedback and difficulties validating sources of information. The study highlights the importance of comprehensive educator training and access to reliable resources. Future research should focus on training educators to integrate ChatGPT effectively and ensure that students are aware of privacy and security considerations. In conclusion, this study provides valuable insights to leverage AI technologies such as ChatGPT to foster critical thinking skills in higher education.(Guo, 2023)

4.3 Distribution of scientific production by area of knowledge

Figure 4 shows the distribution of the elaboration of scientific publications based on the area of knowledge through which the different research methodologies are implemented.
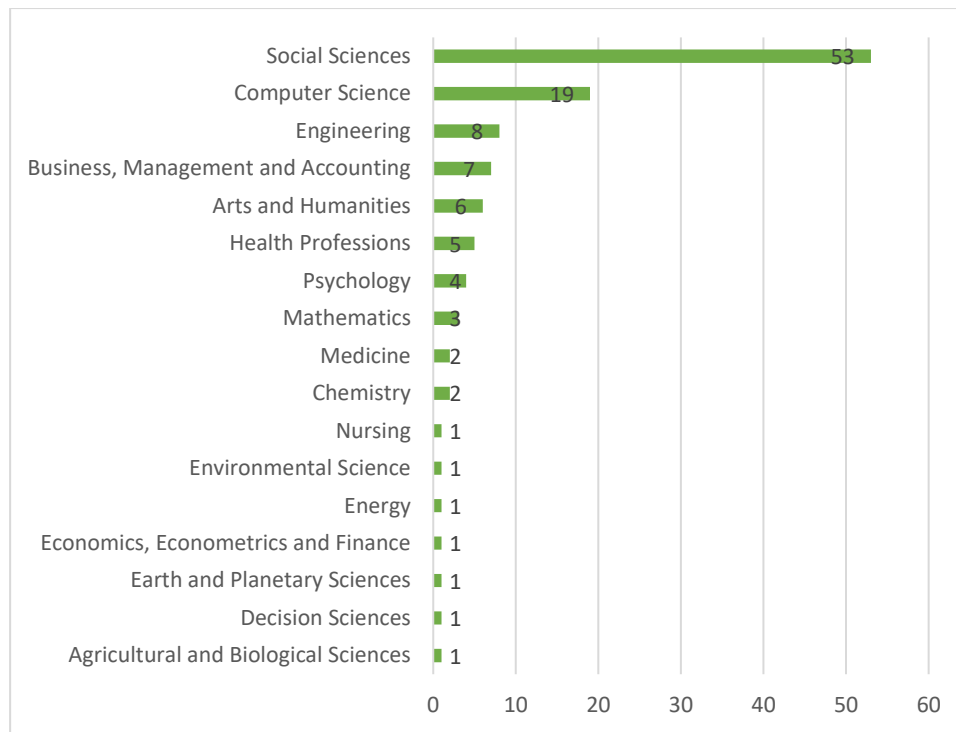
Figure 5. Distribution of scientific production by area of knowledge.
Source: Authors' own elaboration (2023); based on data provided by Scopus

Social Sciences was the area of knowledge with the highest number of publications registered in Scopus with a total of 53 documents that have based their methodologies on ChatGPT, University Modalities and Higher Education**.** In second place, Computer Science with 19 articles and Engineering in third place with 8. The above can be explained thanks to the contribution and study of different branches, the article with the greatest impact was registered by Social Sciences entitled "ChatGPT and its ethical implications for STEM research and higher education: an analysis of media discourse" this study examines how writers of leading STEM and higher education journals perceive the impact of ChatGPT, a powerful AI chatbot, in STEM research and higher education. ChatGPT can generate realistic texts based on the user's prompts. However, this platform also poses ethical challenges to scholarly integrity, authorship, and publishing. Results: Using a comparative media discourse analysis approach, this study analyzes 72 articles from four media outlets: (a) Springer Nature; (b) The Chronicle of Higher Education; (c) Within higher education; and (d) Times Higher Education. The results show that writers expressed diverse concerns and opinions about the potential conflicts and crises caused by ChatGPT in three areas: (a) academic research and publishing; (b) teaching and learning; and (c) human resources management.(Nam, 2023)

4.4 Type of publication

In the following graph, you will see the distribution of the bibliographic finding according to the type of publication made by each of the authors found in Scopus.
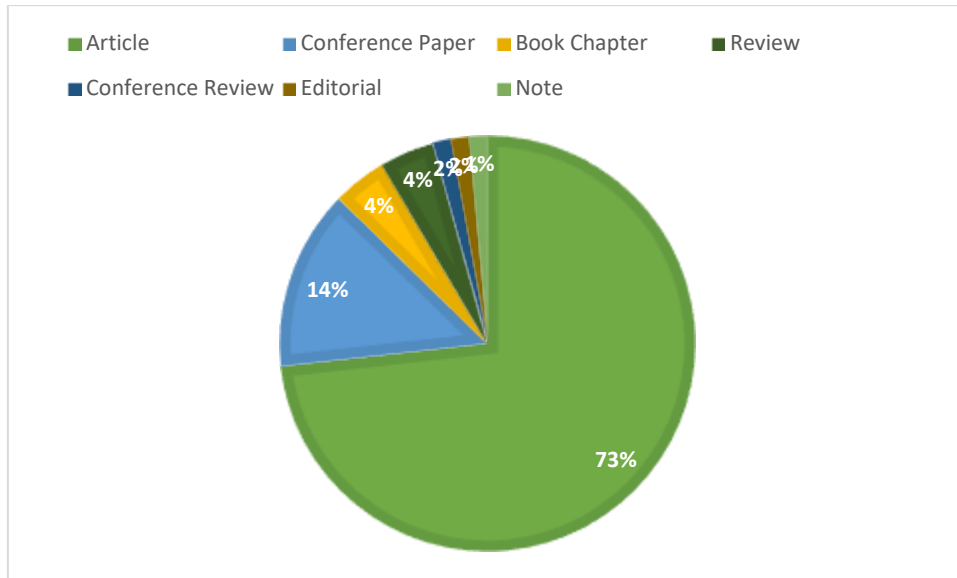
Figure 5. Type of publication.
Source: Authors' own elaboration (2023); based on data provided by Scopus.

The type of publication most frequently used by the researchers referenced in the body of this document was the one entitled Journal Articles with 73% of the total production identified for analysis, followed by Session Papers with 14%. Chapter of the Book are part of this classification, representing 4% of the research papers published during the 2023 period, in journals indexed in Scopus. In the latter category, the one titled "The AI Generation Gap: Are Gen Z Students More Interested in Adopting Generative AI Like ChatGPT in Teaching and Learning Than Their Gen X and Millennial Generation Teachers?" stands out. This study aimed to explore the experiences, perceptions, knowledge, concerns, and intentions of Gen Z (Gen Z) students with Gen X (Gen X) and Gen Y (Gen Y) faculty regarding the use of generative AI (GenAI) in higher education. education. A sample of students and teachers was recruited to investigate the above through a survey consisting of open-ended and closed-ended questions. The findings showed that Gen Z participants were generally optimistic about the potential benefits of GenAI, including increased productivity, efficiency, and personalized learning, and expressed intentions to use GenAI for various educational purposes. Gen X and Gen Y teachers acknowledged the potential benefits of GenAI, but expressed greater concern about over-reliance and ethical and pedagogical implications, emphasizing the need for appropriate guidelines and policies to ensure responsible use of the technology. The study highlighted the importance of combining technology with traditional teaching methods to provide a more effective learning experience. Implications of the findings include the need to develop evidence-based guidelines and policies for GenAI integration, foster critical thinking and digital literacy skills among students, and promote the responsible use of GenAI technologies in higher education.(Chan, 2023)

5. Conclusions

Through the bibliometric analysis carried out in this research work, it was possible to establish that the United States was the country with the highest number of records published for the variables ChatGPT, University Modalities and Higher Education. With a total of 13 publications in the Scopus database. In the same way, it was possible to establish that the application of theories framed in the area of Social Sciences, were used more frequently to

identify the benefits and complications resulting from the incorporation of ChatGPT in universities. As technology is increasingly integrated into academic settings, its role extends far beyond conventional boundaries, profoundly impacting teaching, learning, and research. One of the main benefits offered by these technologies in the academic environment is that it offers students a holistic approach, personalized tutoring is part of this new avant-garde horizon in education since the academic shortcomings of each student can be addressed and their technological resources can be exploited, this need stems from the different existing learning styles and that the unique needs of those present can be addressed. This joint collaboration has driven greater performance in collective learning, this allows students to take advantage of these technological resources in the exchange of information from the network and this in turn helps teachers facilitate communications, have a more fluid lexicon and leave aside the problems between students and educators. These new horizons in academic loads leave aside the existing limitations in face-to-face classrooms, this technological approach allows a new, more dynamic perspective where students can access more globalized educational projects, international backgrounds and the proper exchange of knowledge of different students around the world. ChatGPT has opened up new perspectives in research and academic research. Its natural language processing capabilities speed up literature reviews, data analysis, and information synthesis, helping researchers discover insights and patterns more efficiently. This advancement of the research process not only contributes to the growth of knowledge, but also allows universities to stay at the forefront of innovation and discovery.

To conclude, it is important to recognize that this transformation posed by AI in universities is not far from facing difficulties and ethical challenges, since higher education institutions require the careful management of the vast network of information that will have access to technologies, data privacy and responsibility. That is why it is important to find a balance between these two forces and ensure that the optimal and appropriate use of it is allowed. The digital divide poses a challenge, as not all students may have equal access to technology or the skills needed to navigate it effectively. these disparities are essential to avoid exacerbating existing inequalities in education and ensuring that the benefits of ChatGPT are accessible to all.

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