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Chatgpt: Natural Language Teaching And Learning Process Driven By Artificial Intelligence For Innovation In Communication And Creativity

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Summary

A documentary review was carried out on the production and publication of research papers related to the study of the variables CHATGPT, TEACHING, NATURAL LANGUAGE and ARTIFICIAL INTELLIGENCE. 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 10 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 towards the proposed theme is referenced through a qualitative analysis. Among the main findings made through this research,

it is found that the United Kingdom with 2 publications with the highest scientific production registered in the name of authors affiliated with institutions of that nation. The Area of Knowledge that made the greatest contribution to the construction of bibliographic material referring to the study of CHATGPT, TEACHING, NATURAL LANGUAGE and ARTIFICIAL INTELLIGENCE was Social Sciences with 8 published documents, and the Type of Publication most used during the period indicated above were Journal Articles with 70% of the total scientific production.

Keywords: CHATGPT, NATURAL LANGUAGE, TEACHING, ARTIFICIAL INTELLIGENCE, COMMUNICATION.

1. Introduction

The entry of artificial intelligence (AI) technology into the continued development of the education landscape marks the beginning of a shift in change. It is characterized by profound changes in the learning process and is obliged to promote innovation and creativity among students. AI has emerged as a powerful ally poised to transform traditional educational paradigms, unleash untapped potential, and empower students to thrive in a rapidly changing world.

The convergence of AI and education is a paradigm shift beyond traditional pedagogy. Gone are the days when rote learning and standardized tests were the main tools of education. Instead, AI-powered technologies usher in a new era of dynamic, adaptive and personalized learning experiences designed to ignite the flame of innovation and creativity in every learner. In this research we will delve into the dynamic interaction between artificial intelligence technology and the educational ecosystem.

Considering how AI tools can not only improve the learning process, but also create a generation of thinkers, problem solvers and visionaries better equipped to meet the complex challenges of the twenty-first century. This journey will take us through the many ways AI is used in the classroom, from intelligent learning systems that adapt to the needs of individual students to immersive virtual environments that take students into new realms of exploration and discovery. We will see AI algorithms analyze massive data sets

to give educators insights into students' progress and potential, allowing them to tailor learning strategies for maximum impact. In addition, we will explore the symbiotic relationship between human educators and AI, emphasizing that the role of teachers is not reduced, but enhanced.

Educators become facilitators of creativity, mentors who guide students in their quest for knowledge, and collaborators who co-create innovative solutions. Together, people and machines are paving the way to a future where education is not just about accumulating data, but also about developing imagination. As we begin our journey to AI-powered education, we invite you to join us in imagining a world where innovation and creativity are hallmarks of learning. Together, we will explore the complex web of possibilities for integrating AI technologies into the education system and illuminate a future where every student has the opportunity to thrive and contribute to a more innovative and creative world. For this reason, this article seeks to describe the main characteristics of the compendium of publications indexed in Scopus database related to the variables CHATGPT, TEACHING, NATURAL LANGUAGE and ARTIFICIAL INTELLIGENCE, as well. As the description of the position of certain authors affiliated with Latin American institutions, during the period comprised the first semester of the year 2023.

2. General Objective

Analyze from a bibliometric and bibliographic perspective, the elaboration and publication of research works in high-impact journals indexed in Scopus database on the variables CHATGPT, TEACHING, NATURAL LANGUAGE and ARTIFICIAL INTELLIGENCE 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, TEACHING, NATURAL LANGUAGE and ARTIFICIAL INTELLIGENCE 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 to describe the position of different authors towards 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

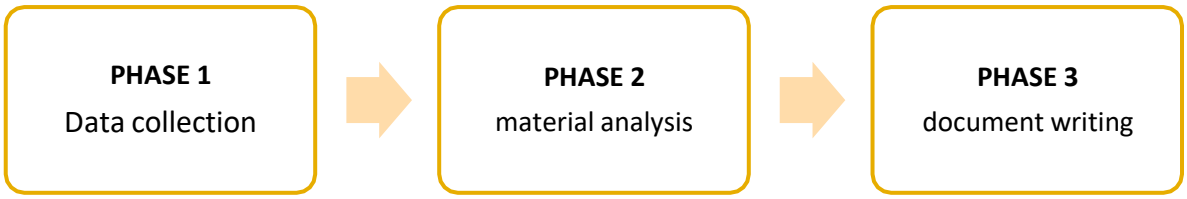

Figure 1. Methodological design
Source: Authors.

3.1.1 Phase 1: Data collection

Data collection was executed from the Search tool on the Scopus website, where 10 publications were obtained from the choice of the following filters:

TITLE-ABS-KEY (chatgpt, AND teaching, AND natural AND language, AND artificial AND intelligence)

- Published documents whose study variables are related to the study of the variables CHATGPT, TEACHING, NATURAL LANGUAGE and ARTIFICIAL INTELLIGENCE.
- 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.

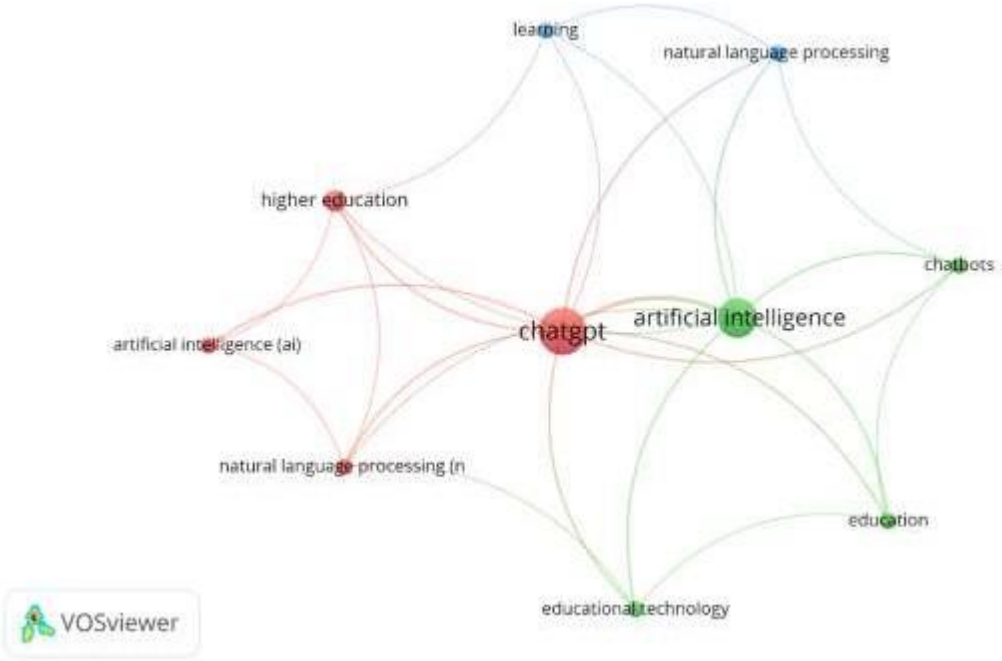

Figure 2. Co-occurrence of words
Source: Own elaboration (2023); based on data exported from Scopus.

Artificial Intelligence 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. Chatgpt is also among the most frequently used variables, associated with variables such as Natural Language Processing, Students, Higher Education, Chatbots, Educational Technology. From the above, it is striking that the integration of artificial

intelligence in the natural language of education has opened new opportunities and with this breaking the traditional limits of the classroom. It is essential to encompass the complex web of teaching processes and learning models implemented by artificial intelligence, with a particular focus on fostering innovation and creativity. We will delve into many aspects of this dynamic, from intelligent learning systems that tailor lessons to individual students to artificial intelligence tools that encourage collaborative problem-solving and critical thinking.

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 Kingdom, 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 2 publications in total. Secondly, Australia with a total of 1 documents among which is the article entitled "Evaluation of the usefulness of ChatGPT as a large language model based on artificial intelligence to obtain

information and answer questions about myopia" This study evaluated the accuracy of ChatGPT in providing accurate and quality information to answer questions about myopia. Methods: For this cross-sectional study, a series of 11 questions (nine categories of general summary, cause, symptom, onset, prevention, complication, natural history, treatment and prognosis) were generated. Each question was entered five times in new ChatGPT sessions (free from the influence of previous questions). The responses were evaluated by a team of five optometry teaching and research staff. The raters individually rated the accuracy and quality of the responses on a Likert scale, where a higher score indicated a higher quality of the information (1: very bad; 2: poor; 3: acceptable; 4: good; 5: very good). Mean scores for each question were estimated and compared among assessors. The agreement between the five evaluators and the reliability statistics of the questions were estimated.(Biswas, 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.

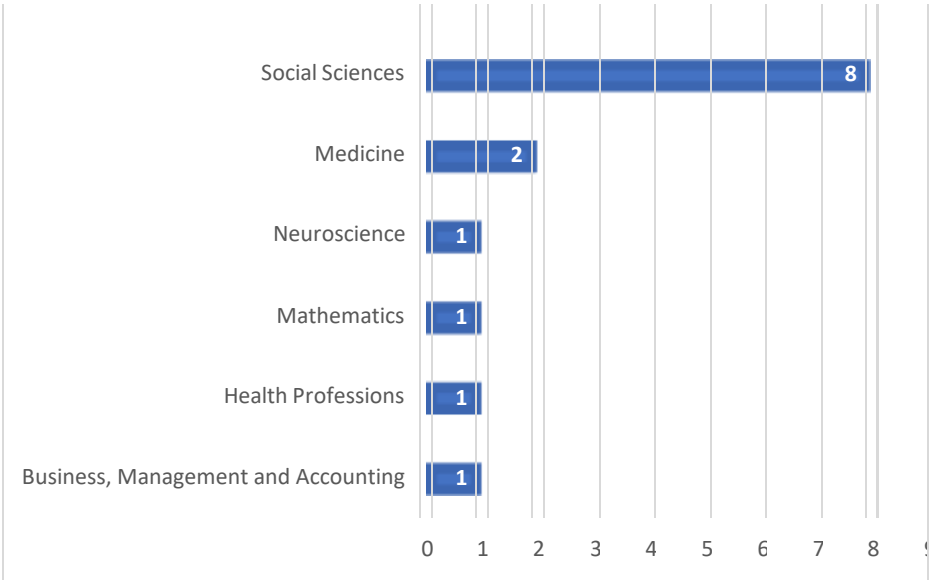

Figure 5. Distribution of scientific production by area of knowledge.
Source: Own elaboration (2023); based on data provided by Scopus

Social Sciences was the area of knowledge with the highest number of publications registered in Scopus with a total of 8 documents that have based their variable methodologies CHATGPT,

TEACHING, NATURAL LANGUAGE and ARTIFICIAL INTELLIGENCE. In second place, Medicine with 2 articles and Neuroscience in third place with 1. 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 "ChatGPT: a revolutionary tool to teach and learn mathematics" This study aims to examine the perspectives of various stakeholders, such as students and educators, on the use of artificial intelligence in the teaching of mathematics, specifically after the launch of ChatGPT. The study adopts a qualitative case study approach consisting of two stages: content analysis of interviews and user experience research. The first stage of the study shows that ChatGPT is recognized for its enhanced mathematical capabilities and its ability to increase educational success by providing users with basic knowledge of mathematics and various topics. ChatGPT can offer comprehensive instruction and assistance in the study of geometry, and public discourse on social media is generally positive, with enthusiasm for the use of ChatGPT in math teaching and educational settings. However, there are also voices that cautiously address the use of ChatGPT in educational settings. In the second stage of the study, the investigation of user experiences across three educational scenarios revealed various issues. ChatGPT lacks in-depth knowledge of geometry and cannot effectively correct misconceptions. The accuracy and effectiveness of ChatGPT solutions may depend on the complexity of the equation, input data, and instructions given to ChatGPT. ChatGPT is expected to be more efficient at solving increasingly complex math problems.(Wardat, 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.

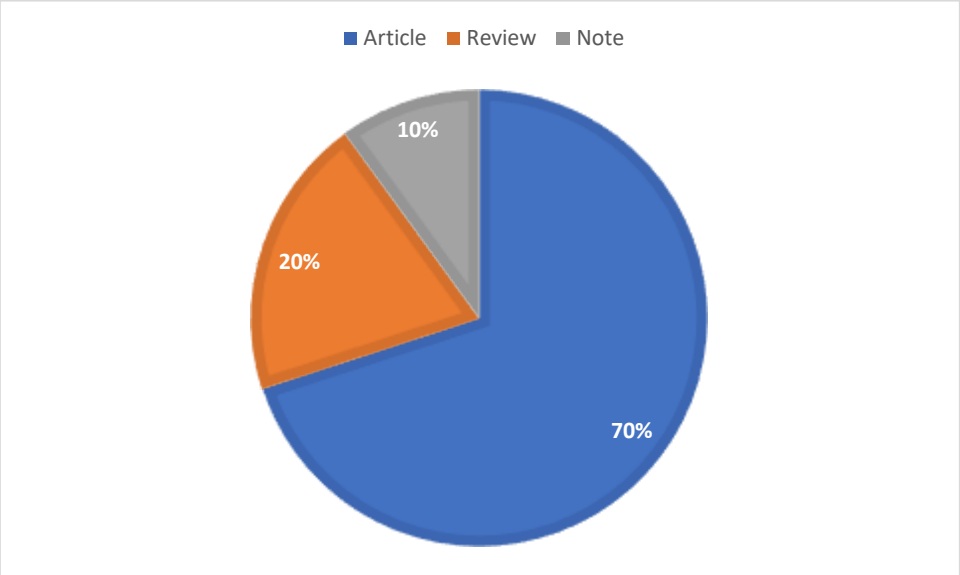

Figure 5. Type of publication.
Source: Own elaboration (2023); based on data provided by Scopus.

The type of publication most frequently used by the researchers referenced in the body of this document was entitled Journal Articles with 70% of the total production identified for analysis, followed by Journal with 20%. Note are part of this classification, representing 10% of the research papers published during the first semester of 2023 in journals indexed in Scopus. In this last category, the one entitled "Can ChatGPT and Bard generate aligned evaluation elements? A reliability analysis versus human performance" this article aims to measure the reliability of OpenAI's ChatGPT and Google's Bard LLM tools against experienced humans trained to perceive and qualify the complexity of typing indications. Intraclass correlation (ICC) as a performance metric showed that the reliability of both ChatGPT and Bard was low compared to the gold standard of human ratings.(Khademi, 2023)

5. Conclusions

Through the bibliometric analysis carried out in the present research work, it was established that the United Kingdom was the country with the highest number of records published for the variables CHATGPT, TEACHING, NATURAL LANGUAGE and ARTIFICIAL INTELLIGENCE. with a total of 2 publications in Scopus database. Similarly, it was established that the application of

theories framed in the area of Social Sciences, were used more frequently in the integration of artificial intelligence technology in the teaching and learning processes of natural language since it has the potential to significantly improve innovation and creativity. The introduction of AI manages to provide unique learning experiences in a personalized and adaptable way for each type of student, allowing them to explore their interests and strengths unique to each individual. It can also offer real-time feedback and support, helping students develop critical thinking and problem-solving skills. In addition, AI can help teachers design innovative and engaging learning materials, leveraging vast amounts of data and resources. However, it is important to ensure that AI is used ethically and responsibly, focusing on fostering collaboration, critical thinking and human creativity. The role of teachers remains crucial in guiding and mentoring students, as AI technology cannot replace the human touch and emotional intelligence needed for holistic education. Overall, the combination of AI and teaching can create a powerful synergy that enables students to become innovative thinkers and creators in an increasingly technologically advanced world.

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