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# CHATGPT: NATURAL LANGUAGE GENERATION POWERED BY ARTIFICIAL INTELLIGENCE FOR INNOVATION IN COMMUNICATION AND CREATIVITY

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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, LANGUAGE, ARTIFICIAL INTELLIGENCE and COMMUNICATION. 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 34 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 11 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, LANGUAGE, ARTIFICIAL INTELLIGENCE and COMMUNICATION was Medicine with 18 published documents, and the Type of Publication most used during the period indicated above were Journal Articles with 59% of the total scientific production.*

**Keywords:** *chatgpt, language, artificial intelligence, communication.*

## 1. Introduction

In recent years, the integration of new technologies and their rapid evolution has marked a before and after in the technology era, one of the most significant advances that has captured the attention of various sectors such as education, innovators and admirers is the generation of natural language driven by artificial intelligence. Innovation driven by AI and linguistics has unleashed the way we communicate, creating unparalleled opportunities that allow us to create unprecedented opportunities to improve creativity and the way we express ourselves. The integration of natural language processing and artificial intelligence has allowed machines to understand, code, interact, generate, and interact with human language in ways previously thought

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to be the exclusive domain of humans. This new capability has immense potential to redefine communication in diverse fields, from business and marketing to education and entertainment.

However, the implications of this technological advance go far beyond mere imitation. AI-powered natural language generation serves as a catalyst for innovation in communication and creativity. The integration of artificial intelligence involves the development of algorithms and models much more complex in which it allows the writing of texts, sensitive with linguistically precise context. When distinguishing large amounts of data from texts, integrated artificial intelligence systems can learn complex grammar, syntax and semantics, which aims to generate content that allows imitating the patterns of human language with greater precision.

In the realm of creativity, AI-generated language serves as a muse to generate ideas, generate inspiration, and encourage unconventional thinking. By harnessing the vast amount of data and diverse linguistic styles, AI can propose creative concepts, generate poetic verses, or even aid in the development of narratives for various media, from literature to film scripts. This symbiotic relationship between human creativity and AI assistance is redefining the boundaries of artistic expression. As we embark on this AI-powered natural language generation journey, it's important to explore both the promises and challenges it presents. Ethical considerations, such as the responsible use of AI-generated content, the potential for bias, and the distinction between human-generated and machine-generated jobs, demand careful examination. In addition, the role of human oversight and collaboration in perfecting AI-generated production remains a topic of continuous exploration.

Finally, the convergence of artificial intelligence and natural language generation has ushered in a new era of communication and creativity. This transformative technology not only offers us unprecedented tools to streamline communication processes, but also triggers a renaissance of innovative thinking and imaginative expression. As we navigate the uncharted territories of AI-driven language generation, it is imperative that we harness its potential responsibly and imaginatively, ensuring it becomes a force that amplifies human ingenuity and connection. 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, LANGUAGE, ARTIFICIAL INTELLIGENCE and COMMUNICATION, 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

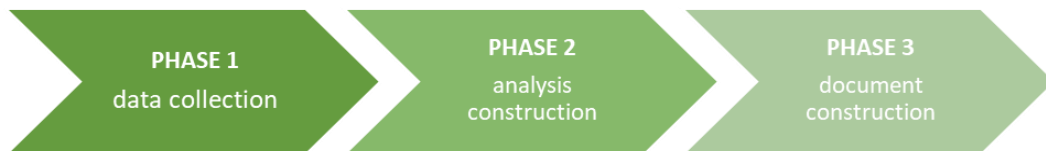
Analyze from a bibliometric and bibliographic perspective, the elaboration and publication of research works in high-impact journals indexed in Scopus database on the variables CHATGPT,

LANGUAGE, ARTIFICIAL INTELLIGENCE, COMMUNICATION 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, LANGUAGE, ARTIFICIAL INTELLIGENCE, COMMUNICATION. 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 34 publications were obtained from the choice of the following filters:

- TITLE-ABS-KEY ( chatgpt, AND education, AND artificial AND intelligence )
- Published documents whose study variables are related to the study of the variables CHATGPT, LANGUAGE, ARTIFICIAL INTELLIGENCE, COMMUNICATION
- 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.

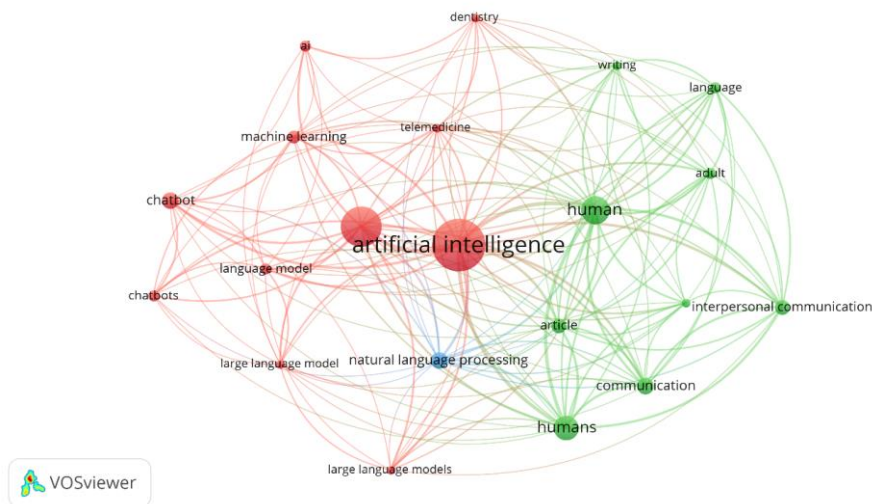
### 3.1.3 Phase 3: Drafting of conclusions and outcome document

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

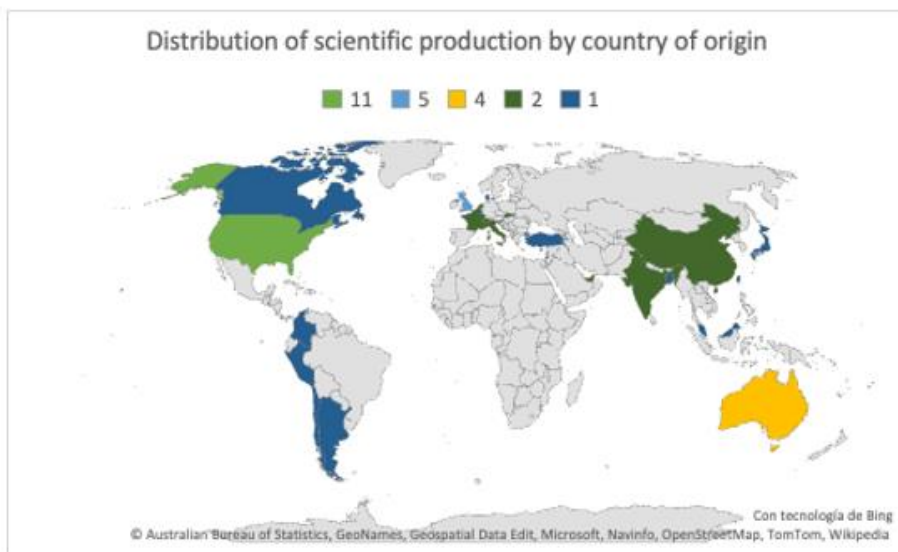
**Source:** Own elaboration (2023); based on data exported from Scopus.

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. Language Model is also among the most frequently used variables, associated with variables such as Interpersonal Communication, Natural Language Processing, Communication, Machine Learning, Language, Chatbot. In this dynamic environment, where the line between human-generated and machine-generated content becomes blurred, understanding the nuances, capabilities, and limitations of AI-powered natural language generation becomes critical. But as with any transformative technology, the emergence of a generation of AI-powered languages raises important questions.

As technology evolves, ethical concerns arise about misinformation, algorithmic bias, and loss of authenticity. Finding the delicate balance between harnessing the innovative potential of artificial intelligence, maintaining ethical standards, and preserving the integrity of human communication remains a huge challenge.

#### 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 period 2023, with a total of 11 publications in total. In second place, the United Kingdom with 5 scientific papers, and Australia ranking third presenting to the scientific community, with a total of 4 papers among which is the article entitled "Increasing physical activity using a just-in-time adaptive digital assistant supported by machine learning: a novel approach for hyper-personalized mHealth interventions" This special communication aims to describe and discuss a novel mHealth intervention approach that proactively delivers adjusted hyper-personalized intervention content to participants in real time.

Methods: Using machine learning approaches, we propose a novel approach to physical activity intervention that can learn and adapt in real time to achieve high levels of personalization and user engagement, supported by a friendly digital assistant.

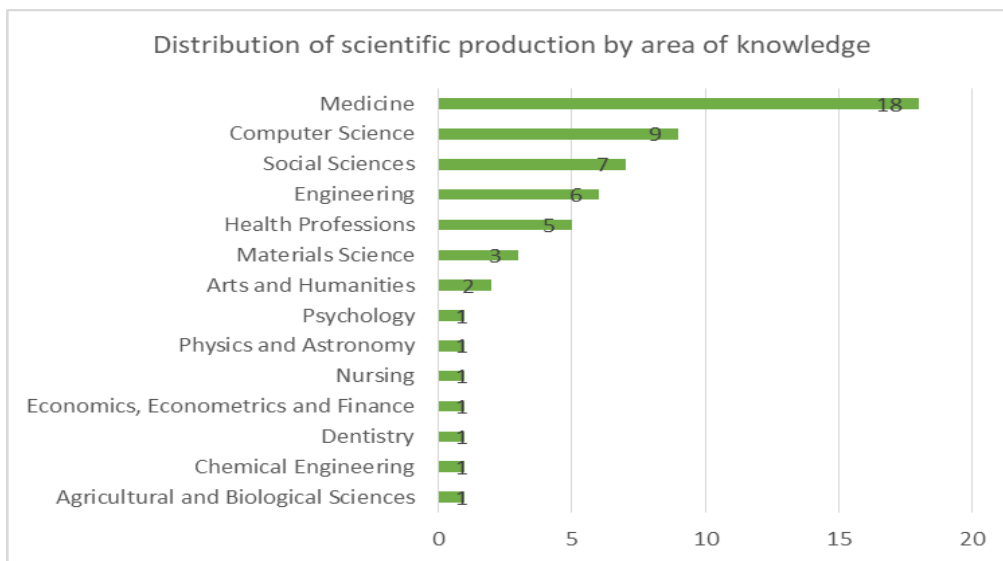
It will consist of three main components: (1) conversations: to increase user knowledge on a wide range of topics related to activities supported by natural language processing; (2) Push engine: to provide users with hyper-personalized action signals supported by reinforcement learning (i.e. contextual bandit) and integrating real-time activity tracking, GPS, GIS, weather and user-provided data; (3) Q&A: to make it easier for users to ask physical activity-related questions supported by generative AI (e.g. ChatGPT, Bard) for content generation.

Results: The detailed concept of the proposed physical activity intervention platform demonstrates the practical application of a just-in-time adaptive intervention that applies various machine learning techniques to deliver a hyperpersonalized physical activity intervention in an engaging manner.

Compared to traditional interventions, the new platform is expected to show potential for greater user engagement and long-term effectiveness due to: (1) using new variables to personalize content (e.g., GPS, weather), (2) providing behavioral support at the right time in real time, (3) implementing an engaging digital assistant, and (4) improving content relevance by applying machine learning algorithms.(Vandelanotte, 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.*

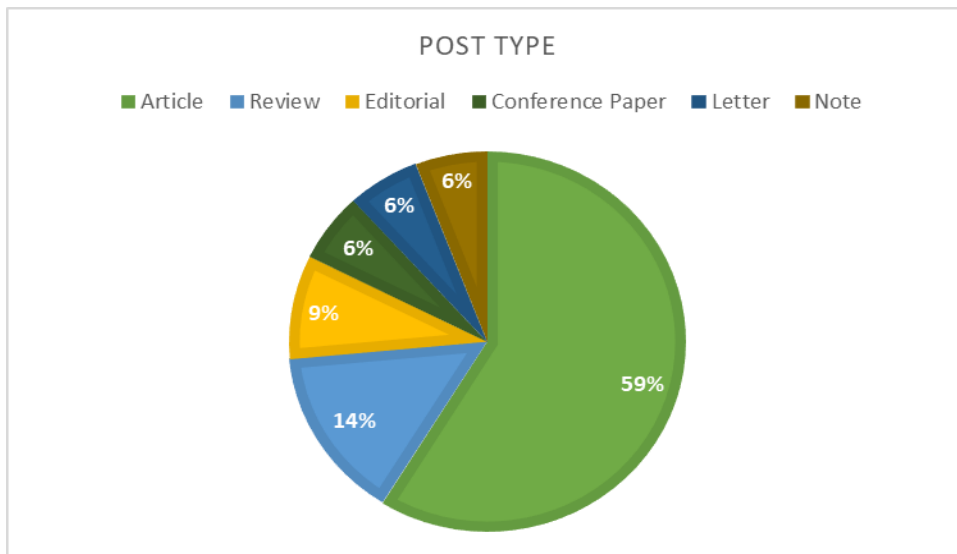
**Source:** Own elaboration (2023); based on data provided by Scopus

Medicine was the area of knowledge with the highest number of publications registered in Scopus with a total of 18 documents that have based their variable methodologies CHATGPT, LANGUAGE, ARTIFICIAL INTELLIGENCE and COMMUNICATION. In second place, Communication Sciences with 9 articles and Social Sciences in third place with 7. The above can be explained thanks to the contribution and study of different branches, the article with the greatest impact was registered by the Medicine area entitled "Can ChatGPT improve communication in hospitals?" This op-ed compares current communication methods with the use of ChatGPT technology to explore whether ChatGPT can improve the efficiency and accuracy of communication in healthcare settings and thus improve patient care.

While natural language processing (NLP) tools, such as ChatGPT and other artificial intelligence-generated content (AIGC), have enormous potential to be very useful in healthcare, they should not be used solely as substitutes for humans and should therefore be used with caution. (Santandreu-Calonge, 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 59% of the total production identified for analysis, followed by Journal with 14%. Editorial are part of this classification, representing 9% of the research papers published during the period 2023 in journals indexed in Scopus. In this last category, the one entitled "ChatGPT: Enhancing lifelong learning in the digital age of higher education" stands out, this article aims to review related works on the use of artificial intelligence in education, with a focus on ChatGPT and its possible applications in higher education. It also examines the benefits and disadvantages of adopting ChatGPT in higher education, as well as tips for its implementation. Finally, the report discusses the future directions of ChatGPT research in higher education. According to the findings of this article, ChatGPT represents an important opportunity for higher education institutions to improve the quality and accessibility of education; However, its implementation must be approached with caution and with a clear understanding of the opportunities and challenges involved. (Rawas, 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, LANGUAGE, ARTIFICIAL INTELLIGENCE and COMMUNICATION. with a total of 11 publications in Scopus database. In the same way, it was established that the



application of theories framed in the area of Medicine, were used more frequently in the impact generated by the implementation of natural language processing driven by artificial intelligence, the generation of language driven by AI can change the way companies interact with customers, They analyze data and generate insights. A key benefit of AI-powered language innovation is its ability to improve the customer experience. By understanding and interpreting customer questions, AI-powered systems can provide accurate and personalized answers, increasing customer satisfaction and loyalty. This can drive innovation in customer service, as businesses can use AI-powered natural language to create chatbots, virtual assistants, and voice devices that provide efficient and seamless customer service.

In addition, AI-powered natural language processing can drive innovation in data analytics. Traditional methods for analyzing large amounts of textual data can be time-consuming and error-prone. However, AI-powered natural language generation can quickly process and extract valuable insights from unstructured data, such as customer reviews, social media posts, and research articles. It can empower companies to make data-driven decisions and identify new trends, which will lead to innovative products, marketing strategies, and business models. However, it's worth noting that the introduction of AI-driven natural language is not without limitations. Language is complex and AI systems can struggle with nuance, context, or cultural differences. Bias in training data can also affect the accuracy and fairness of AI-powered language systems. Ensuring the responsible and ethical use of AI-driven language for innovation requires careful consideration and continuous improvement.

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