Exploring the Impact of Chatbots on Learning Experiences: A Study of Spanish University Students

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Abstract: This paper explores the utilization of chatbots by Spanish university students pursuing education bachelors and masters, aiming to comprehend the impact of these tools on their learning experiences. As an emerging trend in the whole planet, countries and international institutions are publishing guidelines and regulations for the use of Generative Artificial Intelligence. The researchers of this paper administered an online survey answered by 59 Spanish university students with the goal of compiling information about their use and practices of chatbots. Finally, this report discusses the findings and practical implications of the reality in the context described.

Introduction and literature review

In recent years, the integration of technology in education has witnessed a transformative shift, offering new avenues to enhance the learning process (Selwyn, 2023). Among these technological innovations, generative AI powered chatbots have emerged as a promising tool with the potential to revolutionize the way students engage with educational content. This paper explores the reality of the use of chatbots by Spanish university students studying bachelor's and master's degrees in the School of Education, aiming to start understanding the multifaceted impact these controversial tools may have on their learning experiences.

The educational landscape is continuously evolving, and the digital era has brought forth unprecedented challenges and opportunities. Considering this paradigm, educators and students are exploring new ways to facilitate and optimize the learning journey. Chatbots present an intriguing solution that goes beyond the confines of conventional teaching methodologies. UNESCO (2023), European Union and countries have started to publish guidance and protocols for the general use of these applications. Hence, it is time for universities to be aware of how their students use them and consequently reflect about their pedagogical approaches.

In the context of Spanish universities, the adoption of chatbots in educational settings holds relevance as underlined by Romero-Rodríguez, et al. (2023). The culturally rich

and diverse academic environment, coupled with the unique challenges faced by students, provides an intriguing backdrop for investigating the efficacy of chatbots as educational companions. By exploring the opinions, perceptions, experiences, practices and outcomes of these students related to Generative Artificial Intelligence (GAI), we aim to inform educational stakeholders about the role of chatbots in shaping the future of learning, offering a foundation for further research and the refinement of educational practices in the digital age.

Under these circumstances, we aim to explore three research questions:

1. Do Spanish university students in the field of education use the chatbots in their learning practices?
2. Which are the perspectives and opinions of Spanish university students regarding the integration of the chatbots in their educational experiences?
3. Which are the main use practices of the chatbots by these Spanish university students?

Methods

Participants and procedure

This exploratory research involved approximately 400 students from two Spanish universities offering education degrees. Out of those, 59 replied, spanning various academic levels, backgrounds and ages, aimed for diverse representation. Among participants, 50 are pursuing a bachelor's degree, and 9 are enrolled in a master's program or teacher preparation course.

Instrument

A customized survey was developed for this study based on existing research Ngo (2023), Strzelecki (2023), Jinchuña Huallpa, Flores Arocutipa et al. (2023) and Malmström, Stöhr, & Ou (2023), together with experience reported by some university teachers after informal talks to their students. In addition, ChatGTP was asked to provide ideas for the questionnaire. The final survey was composed of two main sections: participants' demographic information and the questionnaire elements that attended research goals. It was originally created in Spanish because of the participants' mother-tongue. A total of 11 questions were asked including multiple options, frequency questions and a 1-5 Likert scale. An open-ended question was added at the end of the survey for participants to comment whatever they considered about their experience and opinions. Respondents not using chatbots were asked their reason for non-use.

Data collection and analysis

The online questionnaire, facilitated through the Google Form survey platform, underwent a pilot study with six participants for clarity and feedback. Invitations were then sent to study participants via email, accompanied by a link to the questionnaire, available for two weeks. The survey's introduction emphasized its purpose, voluntary

participation, and confidentiality. Data analysis utilized Excel and PowerBI for a descriptive study.

Results and Discussion

In response to our first research question, among 59 survey participants, 26 students do not use chatbots. Of these, 17 state that they don't require chatbots for their academic work. Three participants were unaware of these GAI applications, while another three express an interest in using them if they understand their functionality. One individual cites both lack of knowledge and necessity. Notably, two participants consider chatbots "illegal" in the academic context. The finding that 44% of participants do not use chatbots is unexpected and warrants further investigation through interviews to gain deeper insights into their reasons.

Of all participants, 33 use chatbots for various purposes and frequencies, addressing part of our third research question. A majority (90.90%) use chatbots for academic studies, 33.30% use them for work, and 36.4% incorporate them into leisure activities. Within this 36.4%, three participants exclusively use chatbots in their free time.

Examining the purposes of chatbot use (Figure 1), the most prevalent include widening subject-related knowledge, clarifying concepts, and completing course tasks, in accordance with results of research by Malmström, Stöhr & Ou (2023). Followed by the creation of bibliography and summarize texts, while studying for exams ranks as the least cited reason.

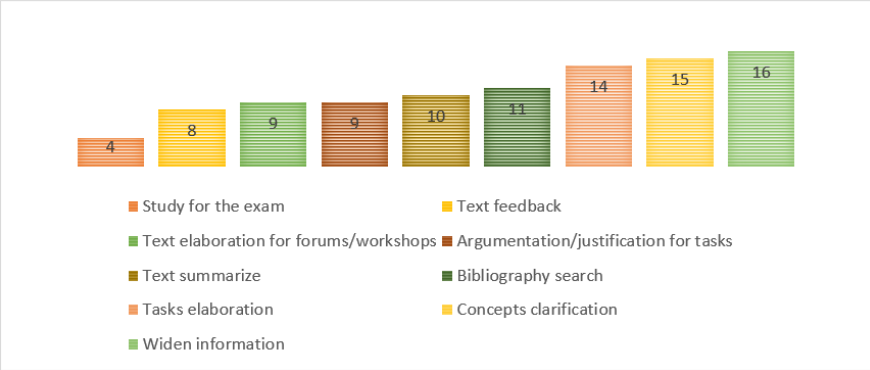

Figure 1. Purposes of use

Regarding why participants use chatbots, 54.5% cite a lack of time to complete course tasks. This aligns with the trend of using chatbots to fulfill course requirements. Additionally, more than ¼ of participants (27.3%) believe chatbots perform task elaboration better than they can, which needs deeper analysis. Other 24.2% use chatbots due to the excessive length of tasks. It might be time for professors to reflect about the type of activities demanded. Some participants express difficulties in text editing, while others appreciate chatbots for their efficiency or admit a lack of imagination.

Concerning how participants utilize chatbot-generated information, the majority use main ideas as a starting point for their own activities, while a few (21.2%) directly copy the

whole text or part of it. Participants commonly use chatbot information as inspiration for theoretical and practical aspects of activities. 10 people compile literature they read afterwards and 6 elaborate references following APA style. 7 seek resources and ideas for tasks, and 6 correct the grammar. Notably, some participants do not use GAI to complete course tasks.

Participants generally hold positive opinions about the information provided by chatbots, with a favorable overall score from the 33 users (Figure 2). This helps to answer our second research question. 81,13% of users find chatbot answers well-structured and there is also positive feedback regarding timeliness with a 79,24% favors “good” or “very good”. Perception of reliability is not as positive, since 39,62% perceives it as “neutral” and 15,09% as “bad”. This is in line with the research by Ajlouni, Wahba &Almahaireh (2023), who identified some reservations in the precision of the data provided by chatbots. Participants assess answer quality between neutral and very good, prevailing the “good” option.

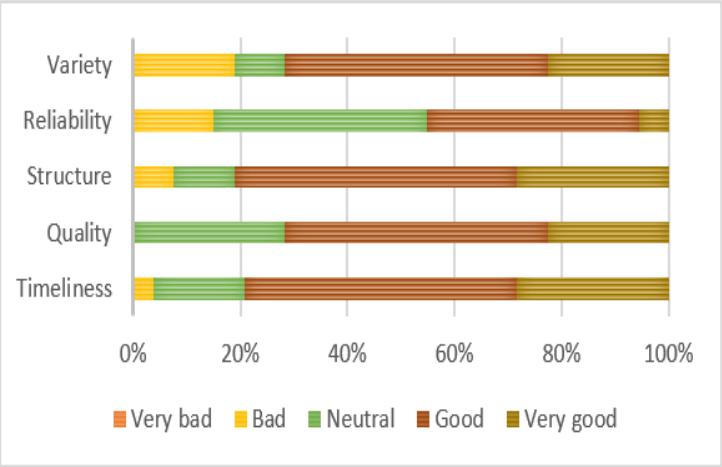

Figure 2. Users’ perceptions

Analyzing in detail Figure 3, the majority of participants, regardless of age and background, do not believe chatbots should be prohibited in education. Similar to the results presented by Ngo (2023), most students find chatbots beneficial for learning and enhancing academic work, but not many participants are convinced about chatbots aid in passing subjects. Concerns about the perception of "cheating" and potential consequences from teachers exist, but in a lower level than Malmström, Stöhr & Ou (2023) pointed out in their research from Sweden. This indicates a potential gap between student’s and teacher’s perspectives and underlining a need in changing the role of educators, commented by Firat (2023). Students doubt whether their teachers will accept the use of this GAI.

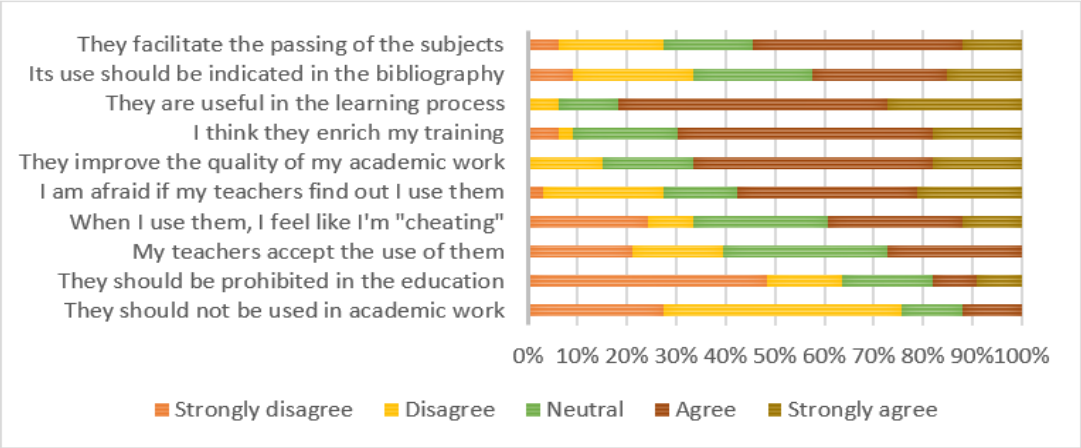

Figure 3. Users' opinions

To end with the third research question, we analyze the frequency users do different actions when utilizing chatbots. More than half of participants never or almost never use them for translating and correcting the text grammatically, whereas 30,30% always or almost always use them to justify or argument their speech and a 30,30% sometimes does this practice. A high percentage of users (51,51% or 72,72% if "sometimes" is included) has the habit to corroborate information provided by chatbots with other sources of information. Even if most participants use this information as a starting point which makes them feel more confident to elaborate their own task, the majority do not explain to their teachers they have used chatbots in their work.

Conclusion, Limitations and Future Research

Chatbots have become integral to the learning experience for many Spanish university students in the education field, viewed as enriching training despite some resistance. While some students believe GAI apps are unnecessary, a majority don't see them as inconvenient or support their prohibition. The unclear stance of Spanish universities on chatbot usage requires further investigation, as students fear potential negative consequences for using them without teacher approval. Most chatbot users in the described context see them as inspiration and a starting point, as well as a source to increase their knowledge on a specific topic or to clarify some concepts, potentially transforming traditional teaching methods. This use is a great resource for learning process that might help to encourage reflection and to internalize contents even better. How the amount and extension of tasks impact on continued chatbot use remains uncertain.

Quality and reliability perceptions vary among users and the corroboration of the answers provided by chatbots seems to depend on the previous studies participants had coursed. This emphasizes the need for critical thinking skills in education. Hence, this study suggests the necessity for educational institutions to reflect on GAI acceptance and the importance of training students for responsible and profitable use. Limitations in participant number and potential social desirability bias prompt the call for broader, cross-cultural studies to address this emerging trend in education. This will be an

interesting future line of research to compare the use of GAI by university students from many countries to analyze the trends in different realities, starting by a comparison between Finnish and Spanish university students. Moreover, in this paper data is presented considering students as a unique group, but we have the intention to examine the differences by demographic information, which will form the basis of a subsequent paper.

To conclude, what seems clear is that the use of GAI chatbots is an emerging trend both teachers and students need to face. With this paper, the authors accept the challenge of this new path to follow in the educational field.

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