AI IN HIGHER EDUCATION: UTOPIA OR REALITY?

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Abstract: *The advent of ChatGPT opened the doors of AI in an unprecedent way. However, while ChatGPT and similar AI technologies have the potential to greatly benefit higher education, there are certain considerations that might lead to viewing them as utopian. The authors explored how learners are using ChatGPT in two Portuguese universities. By analysing the results, it is intended to better understand the challenges presented to universities regarding its use, as well as the degree of satisfaction of the performance of this type of technology in their learning activities. Finally, this study shows that there is a way to go while there are issues to be aware of, such as the dependence on the use of general AI tools.*

Keywords: ChatGPT, Dependency, Higher Education, Portugal

INTRODUCTION

AI is forever changing how educators and learners access and share information. Its capacity to do more than we can imagine will advance at a rate more quickly than it can be understood. ChatGPT and other new AI tools will present new opportunities, namely due to the enthusiastic ability to understand and generate human-like text and free access to a valuable tool for interaction (Gupta, 2023). These new technologies have the potential to create inconceivable opportunities for educators and learners in higher education (Duggan & Knyazeva, 2020). However, envisioning a utopian future where AI solves all learners' problems should not be neglected with the fear of a dystopian reality where AI leads to dehumanized education and potential threats to learners themselves. For instance, utopia can be related to what students expect from AI in the face of promises and advertisements, namely ChatGPT 3.5 (OpenAI, 2023), which we can call personal utopias, and which can generate stress-related challenges when they are confronted with the results obtained, i.e. reality. By now, ChatGPT 3.5 has its limitations and is predicted to be the first in line for advanced AI systems, or it is only a commonly known preliminary substitute for Al.

According to Saleh (2023), there is an emergence for all academia to reflect, explore perspectives, examine implications on lecturing and learning, as well as share fears and hopes. This study focused on research made on how learners from two Portuguese universities are using ChatGPT in their academic activities. The analysis of the results of this research led us to better understand both the opportunities presented to higher education and the learners' opinions regarding the use of ChatGPT and other AI tools in their schoolwork. Finally, this study shows that there is a way to go and an expressed willingness to move towards incorporating all these new technologies into lecturing. One of the points raised has to do with the fact that attention must be paid to the dependence on the use of AI tools, which could lead to a decrease in the intelligence of the academic population.

1. INSTRUMENTS OF AI IN EDUCATION

1.1 Overview of AI in Education

We have been using embedded AI for a long time, even in unforeseen events such as search engines, optical character recognition, transcription, and translation or chatbots. In addition, attention-based models are developed to efficiently handle large inputs and outputs such as images, audio, and video (Vaswani et al., 2017). However, the AI entered the public domain with the launch of ChatGPT 3.5 in late 2022 (OpenAI, 2023). Despite the study on machine learning and AI being ongoing for decades, it is now becoming more accessible and democratized.

Approaches to AI instruments that have been used in Education undergo a variety of features and functionality that can benefit learners, lecturers, and the administration of educational institutions in various ways. Indeed, generative AI has been identified as a powerful tool to improve teaching and learning. For example, Chaudhry and Kazim (2022) explored case studies in subdomains of reducing lecturers' workload, contextualized learning for learners, revolutionizing assessments, and intelligent tutoring systems. The key features can be observed across a sample of major massive open online course (MOOC) platforms, AI-enabled learning management systems, Chatbots for Virtual Tutoring, AI translators, and personalized learning (Biliuk et al., 2023).

Universities today have great challenges that include improvement of the possibility of having personalized learning experiences based on learners' abilities and preferences, real time data analysis, exploration of new courses and ways to enhance research. Within this framework, and to denote the advance of AI in education, it is convenient to specify its intervention in intelligent tutorials and innovative courses, adaptive learning platforms, educational recommendations by virtual assistants, and automatic response evaluation.

On the other hand, applications are becoming conversational, proactive, and interactive (Gartner, 2023), requiring a redesign of user experience to foster a collaborative approach. In addition, AI can interact with its environment and learn from it. Recent advances in Explainable Reinforcement Learning have the potential to dramatically improve learner engagement levels (Frąckiewicz, 2023). This is complemented by

the ability of AI to make connections across different data points, which is viewed by Duggan and Knyazeva (2020) as Augmented Intelligence.

1.2 The impact of ChatGPT in Education

AI integrates many technologies already used, such as machine learning, deep learning, predictive models, automatic speech recognition and natural language processing. Definitions and classifications for AI generally include a set of technologies that apply advanced analytics and logic-based techniques to create new information. Meanwhile, intelligence refers to a process that includes obtaining knowledge based on learning, applying knowledge, and updating knowledge depending on the experience gained after applying knowledge (Bhise et al., 2022). Generative AI, in particular, is exciting because of its wide-ranging applications, such as content creation (Gupta, 2023), but will move beyond responding to natural language queries and begin suggesting things that were not asked for (Gartner, 2023).

Anyway, a Generative AI tools landscape (There's An AI For That, 2023) shows a lot of examples to Text (Bard, Copy.ai, Copysmith, ChatGPT, Jasper, etc.), Audio (Amazon Polly, Voicebooking, etc.), or Code (Mostly.AI, OctoML, etc.). Moreover, learners use AI-based software like Grammarly for language processing (Hutson et al., 2022), DeepL with millions of translations every day, Happyscribe capable of transcribing any video or audio into text, or Copilot which is present in Microsoft 365 Word and is able to help writing, editing, or summarizing, and at the same time creating content.

Virtual assistants like ChatGPT 3.5 can provide support to a large number of learners simultaneously or could be used to grade essays or other written assignments, freeing up instructors to focus on more high-level tasks like providing feedback and support to learners (Cotton et al., 2023). Rethinking human machine interaction with natural language, ChatGPT 3.5 promises to enhance productivity when prompt textual inputs that provide some context on what is expected for the outcome. The different prompt categories and principles for effective prompt writing determine how to apply these concepts in a real-world setting (Nyakundi, 2023).

When prompted with the question "why ChatGPT may present challenges or limitations in higher education" (own work), ChatGPT 3.5 generated text indicating reasons like (OpenAI, 2023): ChatGPT's language capabilities can help learners understand complex texts, and facilitate communication in different languages; ChatGPT operates based on patterns and statistical correlations in the data it was trained on, rather than true comprehension or contextual understanding; or ChatGPT's knowledge is limited to what it has been trained on, which may not encompass the breadth and depth of subjects taught in higher education. Relying solely on ChatGPT for educational support could lead to misinformation or misunderstandings if not carefully monitored. Consequently, checking results before using them is a critical quality assurance task to ensure that correct assumptions and conclusions are obtained. ChatGPT 3.5 can inadvertently perpetuate biases, and this can be problematic in educational settings that aim to provide unbiased and inclusive learning experiences. Other limitations include ChatGPT training with limited knowledge of the world and events not included after 2021 (IDC, 2023). Finally, ChatGPT 3.5 does not possess emotional intelligence

or the ability to empathize with learners. According to Gillani et al. (2023), technical limitations entail important risks and ethical considerations which have significant bearings on the application of AI to the field of education. For instance, Bubeck et al. (2023) put special emphasis on discovering more specific limitations.

1.3 The distress of Higher Education institutions

The overall impact of AI on higher education depends on how institutions navigate these challenges and leverage AI's capabilities to enhance the learning experience. They can mitigate these potential issues through careful planning, clear communication, proper training, and thoughtful implementation strategies. It is important to note that the impact of AI depends on how it is integrated, the ethical considerations taken into account, and the adaptability of these institutions to new technologies (OpenAI, 2023). Nonetheless, it is critical to consider that there was no inherent reason for ChatGPT or similar AI systems to distress higher education institutions and were not developed to cause affliction.

First of all, affliction can emerge if cultural values are not supported, and institutional action is taken to change culturally responsive pedagogies and a collaborative approach to education with AI. The loss of educational values could happen if AI-generated content becomes the primary source of educational materials and might be a risk of losing the values and cultural context that human educators bring to the lecturing process. Also, the learner's dependency on AI systems could happen if learners become overly reliant on its use for learning and problem-solving, because it might hinder their development of critical thinking, creativity, and independent research skills. In addition, a few potential ways in which AI systems could inadvertently lead to distress or affliction: job insecurity among lecturers and administrative staff; learners might miss the personal touch, mentorship, guidance, and emotional support; learners could misinterpret or misunderstand certain concepts, leading to confusion and frustration (OpenAI, 2023). On the other hand, human interaction, mentorship, and the ability to engage in deep discussions are crucial aspects of the learning process that AI might struggle to replicate. Moreover, mismanagement of data security and privacy could lead to distress among stakeholders.

Higher education institutions were practically forced to review their AI strategy in the face of Open AI's decision to publicise ChatGPT 3.5 and grant free basic access, contrary to what had been the practice of other AI stakeholders. This is one reason why most academia agrees that the methods of lecturing and learning ought to be revisited (Saleh, 2023), keeping up with the changing times and accelerating technology needs (Kumar, 2021). Nevertheless, the distress of higher education institutions could be also related to costs, as investing in AI systems means costs that will only increase. It seems important for those investments to increase learners' learning experiences, as indexed by their self-rated satisfaction (Rodway & Schepman, 2023). Bender et al. (2021) provide recommendations including weighing the environmental and financial costs first, curating and carefully documenting datasets rather than ingesting everything on the web.

Finally, effective change management strategies, including clear communication, training programs, and involvement of key stakeholders, are crucial in creating

a positive culture around adopting ChatGPT. An organizational culture that promotes collaboration and cross-departmental teamwork can facilitate the integration of ChatGPT into the higher education ecosystem. Collaboration, although very old, is at the core of new AI pedagogy (Saleh, 2023).

1.4 The learner's push

Despite the little that is known about the distress of learners, or the variables positively or negatively associated with the daily use of ChatGPT 3.5, the learners push to speed up artificial intelligence adoption in higher education institutions. Therefore, ChatGPT can help learners to push their learning and critical thinking to focus on topics that can help them undertake their specific skills gaps. This is a kind of pull learning where Generative AI could push the skills and capabilities that learners need in autonomous learning. Also, learners need to continue to pull the skills and benefit from the collaboration agenda between academia and AI enterprises.

On the other hand, there is a risk that learners may use this technology to cheat on assessments (Gonsalves, 2023), and the acknowledgement of these limitations leads academia to actively seek alternative assessment methods to maintain academic integrity (Elkhatat, 2023), due to a potential threat to the integrity of online exams (Susnjak, 2022).

Given the importance of the above issues, in this study the authors took into account the objective of understanding the opinion of learners in the use of AI tools, such as ChatGPT, in higher education institutions in Portugal.

2. METHODOLOGY

Scientific research can be carried out using a variety of methodologies. The orientation of the research should take into account the objectives of the study, the information it intends to collect and the means to collect that information. The use of a survey in conducting research on performance and analytical frameworks is a widely used tool that allows investigating specific behaviours in institutions through examples in the answers obtained (Akyüz & Erkan, 2010). Evans and Mathur (2005) listed some types of surveys that are most widely used, such as online surveys, email surveys, physical surveys or surveys conducted by telephone. Furthermore, Ouyang, Zheng and Jiao (2022) claimed the implementation of more empirical research to test actual effects of AI applications, and Zhai et al. (2021) suggested it into three categories: technique, lecturers and learners, and social ethics. Following factors that make responding to the form convenient for both the respondent and the interviewer, this research conducted physical surveys between lecturers and learners. The advantage of this method is to make learners feel confident and comfortable in participating, and it is much easier to engage the classrooms for a long time. However, there are also some disadvantages such as representativeness of the sampling. The questions posed benefit from gathering mainly quantitative data, with answer scales used to measure attitudes and opinions, while qualitative data emerges in open answers, classroom briefings, and observations. Respectively, all data was classified and divided between numeric and categorical data.

2.1 Research questions

The methodological approach of this study was based on two main research questions: Is the use of AI tools during higher learning process influencing the learners' work? Are these AI tools improving lecturing?

2.2 Sample definition

Taking advantage of the end of the 2022–2023 academic year (May and June), to try to ensure a higher response rate (100%), this study carried out a physical survey on 220 learners of the second and third year of Information Technology courses from two private universities in the Lisbon region, whose ages range between 20 and 45 years – a wide range given that there are also after-school classes for working learners, with a male predominance in the group of respondents.

2.3 The survey

The survey aimed to understand the reality in Portuguese higher education regarding the use of ChatGPT in their academic activities. By analysing the results, it is intended to better understand the challenges presented to the universities regarding its use, as well as the degree of satisfaction of the performance of this type of technology in their study activities.

Due to the fact that this was a physical survey in the classrooms, 100% was the level of participation. The survey had eight questions, asking (1) if the learner used ChatGPT 3.5, (2) if so for which purpose (private or academic work), (3) if the results obtained were confronted with other sources and (4) if they were up to date, (5) if the use of ChatGPT 3.5 was useful for their academic work, (6) if sources were mentioned, and finally asking (7) if in their opinion this new technology will alter the traditional way of teaching and (8) how should teaching be changed to cope with these new tools.

Analysing the results of the data obtained (Figure 1), it appears that 85% of the respondents regularly use ChatGPT 3.5 to obtain information for professional and/or academic purposes, of which 54% also use it for personal matters. It was observed that 77% of the respondents usually check the results obtained with other sources of information, as they found differences in the information obtained and even 31% do not trust that information. Many respondents also stated that depending on the way the question is asked, the result may differ.

Although half of the respondents using ChatGPT claim that the results obtained were correct, the other fifty per cent said that they confronted the bot and that it did not always correct the results. On the other hand, they claim that using this tool makes it easier to get the answers they want. If they have a question about something, they can just ask the AI directly, there is no need to search through search engines that only return links whose sites must be searched and their information summarised, and it also allows them to complete data that the materials provided in the discipline do not include.
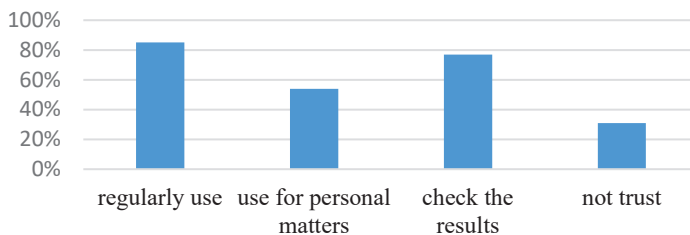
F i g u r e 1. Learners' ChatGPT use
S o u r c e: Own work.

When asked about how teaching can change, with artificial intelligence being one of the parts of this change, several interpretations and opinions were transmitted. In general, it was stated that teaching should not block the use of these tools, but rather ally with them, taking to the classes other types of challenges and more complex paradigms allowing learners themselves to explore the tools and compare the results. It is also a general opinion that this type of tools will interfere with the role of the lecturer as it should be readjusted to this new reality, thus allowing learners guided by artificial intelligence, where the program will be defined by lecturers, to have individualised classes and adapted to their real needs, thus raising the quality of teaching where, given the increasing size of the classes, personalisation and individualisation are increasingly smaller.

3. DISCUSSION

3.1 The results

Although several opinions, especially from younger respondents, expressed the hope that through the use of AI, teaching would become more interactive and less "boring", all the issues addressed in relation to the use of bots such as ChatGPT in teaching should be considered with the utmost care. The results obtained through this study convey that the reality of these new AI tools is still in their initial state, far from perfect. They should not be used for all kinds of problems and that it is important to maintain critical thinking in classrooms and in the field of teaching itself. Its use in the field of teaching should be relativised by the imprecision of the results in situations where one is working with technical and highly complex issues. On the other hand, it has the facility of being a more assertive "search engine", getting straight to the point without digressing into adverts and advertising associations.

It is assumed that AI can become a great teaching resource especially for its ability to adjust to the needs of learners (emphasising the issue of learners with special needs), where the lecturer has more difficulties in adapting and that other teaching resources simply do not have the same capacity.

It can be concluded that there is still a long way to go in the evolution of this type of system, from its full acceptance to the recognition of its complexity and technicality. This study shows, however, that there is a way to go and an expressed willingness to move towards incorporating all these new technologies into teaching. One of the

points raised has to do with the fact that we must be aware of the dependence on the use of AI tools, which could lead to a decrease in the intelligence of the population, since its misuse could lead to the habit of not thinking, expecting AI to solve all problems autonomously. Therefore, its use in universities should be properly regulated (AlDhaen, 2022) and learners should be properly trained so that it is used responsibly.

3.2 Managing expectations, utopia and reality

As in all of higher education, a decision map on ChatGPT should put stakeholders willing to take full responsibility (legal, moral, etc.) for any inaccuracies (Sabzalieva & Valentini, 2023). The novelty in this study has shown that utopia is related to the majority of learners regularly using ChatGPT, but the reality is that the majority of these learners usually check the results obtained with other sources of information (77% as seen above). Because Generative AI are trained on massive datasets of text from the internet (Gupta, 2023), it is relevant for ChatGPT and related AI systems to curate training datasets through a thoughtful process of deciding what to put in (Bender et al., 2021). For instance, there is a responsibility gap caused by different sources, some technical, other organisational, legal, ethical, and societal (Santoni de Sio & Mecacci, 2021), and ChatGPT could be a bad idea for higher education (Narayanan & Kapoor, 2022). So, AI labs and independent experts should jointly develop and implement a set of shared safety protocols (Future of Life Institute, 2023). However, addressing security risks will require collaboration and cooperation with academia, applying knowledge to a given situation overcoming AI systems, because one important aspect of human intelligence is emotion (Bhise et al., 2022).

The seduction and populism of ChatGPT could be unevaluated of shared reality and reason, because learners are comfortable in adopting new technologies like ChatGPT and "Habit was found to be the best predictor of behavioural intention, followed by performance expectancy and hedonic motivation" (Strzelecki, 2023, p. 1).

Technological utopianism views technology's impacts as extremely positive (Chaudhry & Kazim, 2022), but learners may not necessarily perceive the introduction of these technologies in a positive way (Rodway & Schepman, 2023). Use cases now need to be defined, creating paths to advancement, and necessary disruptions to teaching, learning and assessment, and administration (Davison, 2020). Until recently, the reality is, even in an unforeseen way AI is in use in several applications, such as with a chatbot, web search, or classification and translation systems (Hutson et al., 2022). The utopia is that some of these applications are not yet developed enough to be fundamental in higher education. For example, authors experienced unexpected quality problems in classroom real-time AI speech translation for Erasmus learners. There is a way for accuracy and care of transparency in AI services.

CONCLUSION

Higher education institutions can actively cultivate a culture that fosters innovation, collaboration, and adaptability, which can positively influence the adoption of ChatGPT and other AI systems. Nevertheless, nothing is more utopian than the idea that higher education institutions could face future liability for an unforeseen use of

AI, or in a dystopian envision that AI could become an all-encompassing force subjugating the learner. Learners appear to be autonomous and dependent on the use of ChatGPT and claim that using this tool makes it easier to get the answers they want. However, an overreliance on AI technology like ChatGPT may lead to a diminished emphasis on human interaction and engagement in higher education. The reality is that these new AI tools are yet in their initial state, far from perfect, as it should be readjusted, thus allowing learners guidance, where the program will be defined by lecturers, to have individualised classes and adapted to their real needs. Out of the darkness of disruption, ensuring a balance between the benefits that AI offers, the need to be properly regulated and learners properly trained, then it would be used responsibly. These limits need to be defined not only at a legislative level, but also at the personal level. Not technological obscurantism, but critical thinking perspectives and audit AI tools to avoid losing the human aspect that is crucial in education.

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