





Readiness of the Student Community for Using Artificial Intelligence in Higher Education

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Abstract

What challenges or opportunities exist when using artificial intelligence (AI) at the university? This work presents the experience lived in a Futurist Applications of AI in Education Workshop in which professionals from different educational levels, roles, and areas worked together to construct proposals to enhance the use of AI in higher education. As a parallel research process, a questionnaire was applied to inquire about the perceptions of the uses of AI and the personal and professional applications of managers, professors, students, and stakeholders. The results reflected a broad intention to understand, use, and implement AI to develop and strengthen the processes of access, teaching, and learning in higher education.

Keywords: Higher education; educational innovation; STEM.

1. Introduction

The advances in Artificial Intelligence (AI) and its increasingly present inclusion in everyday social dynamics have changed how people and organizations function and interact (Kumar et al., 2023). The uses of AI in the different social spheres and areas of knowledge are varied. For example, in the areas of medical services (Huynh-The et al., 2022), human resources and recruitment (Vrontis et al., 2022), and tourism (Babeş-Bolyai University & Popovici, 2023).

AI has also had a significant impact on education (Baltazar, 2023). AI can encompass intelligent tutoring systems, automated grading systems, and personalized learning platforms, executing both routine tasks and more complex decisions, such as guiding students through interactive lessons (Adiguzel et al., 2023). In this area, various international organizations have begun creating guides, curricula, and strategies to teach and assess AI literacy (Office of Educational Technology, 2023).

Studies emphasize the need to develop AI literacy skills, as well as the proposal of medium and long-term plans to support training (Cetindamar et al., 2024; Perchik et al., 2023). In addition, they highlight that the effectiveness of AI in education is closely linked to the knowledge, skills, and readiness of users for its adoption (Flavián et al., 2021; Martínez-Plumed et al., 2021). Given that the preparation of all participants in university communities is a key element for implementing AI in Higher Education (HE) at the international level, it is important to identify the current state of universities, especially in Mexico and Latin America.

1.1. Background

In HE, the use of AI has been addressed in various ways. Some works explore the creation of guidelines for its integration and options for including it in a relevant way in the curriculum (Neumann et al., 2023), generating a model by identifying student learning patterns in order to facilitate and qualify teaching and learning (Sallu et al., 2023), and establish policies regarding the use of AI tools (Xiao et al., 2023).

Overall, the number of studies on AI primarily focused on HE reflects the growing interest in understanding how technology influences universities. The adoption of AI by universities, driven by the COVID-19 pandemic, has changed the dynamic and generated questions regarding the skills necessary for teachers (Alnasib, 2023), students (Dai et al., 2020; Tung & Dong, 2023) and staff or stakeholders (Baabdullah, 2024; Issa et al., 2022). For example, Alnasib (Alnasib, 2023) proposes that teachers' readiness to integrate AI into a HE context may be influenced by the perceived benefits of AI in teaching, in HE, available facilities and resources, and behavioral attitude and intent towards AI.

This work aims to study perceptions about the readiness and willingness of the university community to adopt and use artificial intelligence technologies in HE.

2. Readiness of the university community for the use of AI

The research was carried out as a parallel research exercise in an action-participatory research intervention. Participants, selected for convenience, responded to the instrument through an online survey using the Google Forms tool. To be included in the study, people had to belong to the student community at the time of the survey; that is, they had to be students, professors, or staff active at a university and answer the survey. If not, participants were excluded from the study.

Demographic data was collected. Participants were also asked to answer whether they were AI users and knew how to code and were asked to write down the tools used or used respectively. All respondents were invited to participate voluntarily and were presented with an online informed consent form prior to their responses.

The measurement instrument was obtained from Alnasib (2023). It is broken down into 46 items along six dimensions: perceived benefits of AI in HE (7 items), perceived benefits of AI in teaching (14 items), attitude toward AI (7 items), willingness to use AI (6 items), behavioral intentions to use AI (5 items), and facilities and resources for AI use (7 items). Two items were eliminated in the opinion of the researchers. The items eliminated were "*I think it is fun to use AI technology*" from the AI attitude axis and "*AI technology is useful for teaching and learning activities*" from the perceived benefits of AI in the teaching axis. In total, the instrument had 44 items.

2.1. Action-participatory research intervention

Within the framework of the IA education Summit in the IFE Conference held in Monterrey, Nuevo León from January 23 to 25, 2024, the Futurist Applications of AI in Education Workshop was held, in which the educational community was invited to participate in a collaborative exercise to generate educational strategies based on AI.

The workshop was designed to provide a space for dreaming, designing, and pitching futurist ideas about applications of AI for education. The objective was to gather professors, academic leaders, AI researchers, education researchers, and EdTech entrepreneurs from different countries and institutions into a space for innovative AI uses for futurist education.

The workshop started with a presentation of the participants and organizers and a brief introduction to the objectives and activities of the workshop. Participants were asked to fill out the questionnaire during the first ten minutes. Next, the participants formed teams randomly. Each team developed a futurist proposal for using AI for Education, including details about its implementation and possible ethical issues. Following this, each team selected a representative to pitch their idea. Notes were taken during the workshop.

3. Results of the research and intervention

25 valid surveys were obtained from the participants. The demographics of the participants are described in Table 1.

Attendees came from various institutions, ranging from students and professors to managers, directors, and CEOs, some with 1 to 5 years of experience in their role (44%), and others including more than 15 years of experience (36%), with training in various areas (business, engineering, science, psychology, humanities, architecture, among others). 100% of the participants said they were AI users (with the highest frequency daily (0.64%) and weekly (20%)), using tools such as those described in Figure 1A, with Chat GTP being the most mentioned. However, only 52% (13 people) said they knew how to program (Figure 1B).

Table 1. Demographic distribution of study participants.

Demographic Characteristic	Nominal Distribution (%)
Gender	
Female	9 (36)
Male	16 (64)
Age (years)	
21-30	4 (16)
31-40	5 (20)
41-50	9 (36)
51-60	6 (24)
>60	1 (4)
Country of residence	
Mexico	18 (72)
Peru	3 (12)
Spain	1 (4)
Argentina	1 (4)
Colombia	1 (4)
Chile	1 (4)
Educational level	
Bachelor	4 (16)
Masters	8 (32)
Doctorate	11 (44)
Other	2 (08)
Type of institution	
Public	4 (16)
Private	21 (84)

Considering the six dimensions of the survey, the participants' average perceptions were similar when their responses were analyzed by age range and gender regarding their intentions of use and perceived benefit of AI for their daily academic and work life. There was only a slight difference between participants over 56 years and the rest of the group, who considered the facilities and resources available for AI use moderately favorable. However, no significant difference was found. The participants' perceptions based on their role in their institution (Figure 2) show a difference in the opinion of researchers who consider that their institutions still need to be fully equipped concerning facilities and resources for AI.

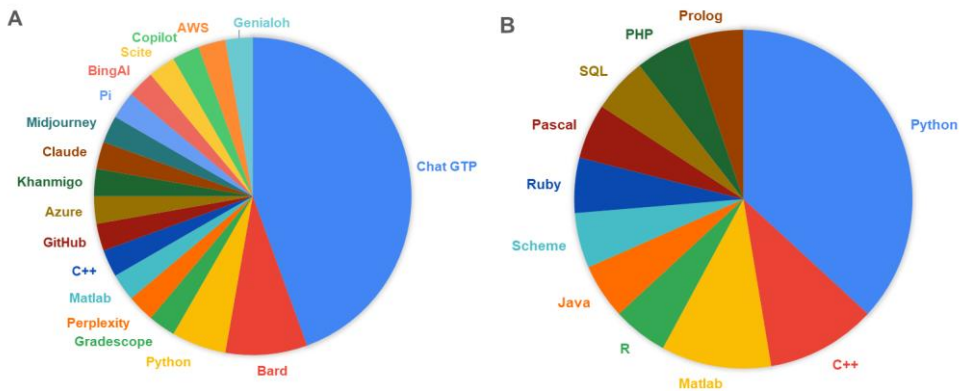


Figure 1. AI tools employed by participants. A. As Users. B. As programmers.

4. Discussion

Both the workshop and the ideas of the attendees, as well as the responses to the survey on the disposition of the university community towards the use of AI, generated relevant information for the study of three essential aspects: (a) The development of the incorporation of AI in the teaching and learning processes that include the areas of governance, academics and research of the university; (b) The development of AI-based tools to support the processes of those who teach and those who learn, and (c) The incorporation of AI-based tools to generate classroom proposals that generate social impact.

These approaches coincide with recent works highlighting the need to include AI in the curriculum with the participation of the educational community's actors, including its governance (Neumann et al., 2023; Sallu et al., 2023). Likewise, the results show the openness of teachers, students, and stakeholders (Baabdullah, 2024) to understanding the use and incorporation of AI in educational processes in general (teachers and students) (Alnasib, 2023) and their academic and professional activities. These findings extend the framework of the effects of AI for education proposed by Nguyen (2023) to reveal the advantages and disadvantages of its incorporation and provide clues for the effective incorporation of AI in HE.

AI readiness in Higher Education

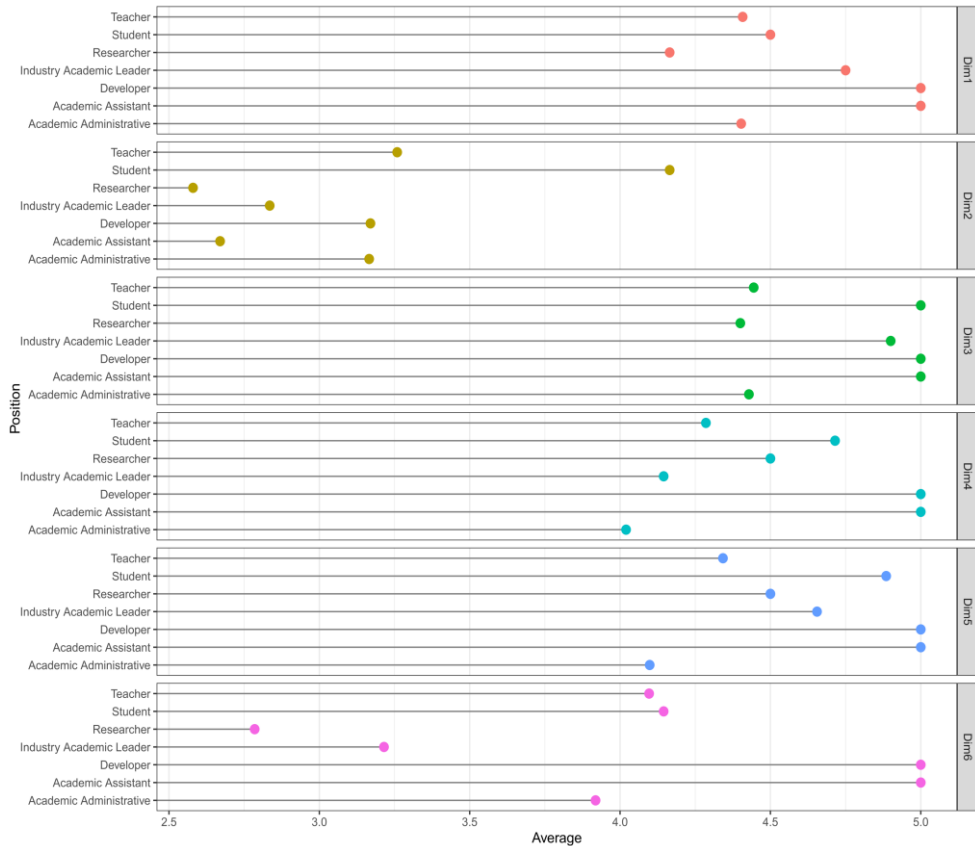


Figure 2. Perceptions on the use of AI. Dim1: perceived benefits of AI in HE, Dim2: perceived benefits of AI in teaching/learning, Dim 3: attitude toward AI, Dim 4: willingness to use AI, Dim5: behavioral intentions to use AI, Dim6: facilities and resources for AI use.

Although participants are open to using AI (Dim1), students perceived more benefits (Dim2). This could be related to innovations such as voice-activated digital assistants and AI-powered chat options that generate answers to academic questions and increase students' willingness to use them (Ahmed et al., 2022). The benefits are less clear for the rest of the participants. This may be related to the understanding of incorporating AI in education in a focused way, with adequate resources to facilitate the teaching (training). The perception of these participants also relates to the need for investment in resources that improve the quality of education (Dim6) (Nguyen, 2023). Additionally, it is necessary to build policies and ethical guidelines that guide its use throughout the educational community, particularly for students (Abdullah et al., 2023).

Statistical analysis cannot be performed to see the effect of the type of participant. In future work, survey validation will be applied in Spanish-speaking countries, and thus, the preparation of HE communities in Mexico and Latin America will be studied.

5. Conclusions

Through experiences such as this, where different generations come together to share their ideas, it is possible to normalize the use of AI in an intergenerational way. It is also possible to identify useful points of analysis by future studies with an interdisciplinary focus that develops joint efforts of institutions to 1) facilitate access, 2) accompany its responsible use, and 3) ensure AI use sustainability in institutions. As AI advances in technological growth and impacts different areas of HE, it becomes increasingly clear how to leverage it to improve the quality of education and the organizational structure of institutions to facilitate informed decisions about its application and its implications for the future.

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