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**EDUCATIONAL INNOVATION IN MEXICO:
ENHANCING LEARNING WITH ARTIFICIAL
INTELLIGENCE, APPLYING CHATGPT IN
HIGHER EDUCATION INSTITUTIONS,
PROFESSOR-STUDENT COLLABORATION**

**INNOVACIÓN EDUCATIVA EN MÉXICO: MEJORA DEL
APRENDIZAJE CON INTELIGENCIA ARTIFICIAL, APLICACIÓN
DE CHATGPT EN INSTITUCIONES DE EDUCACIÓN SUPERIOR,
COLABORACIÓN PROFESOR-ESTUDIANTE**

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Educational Innovation in Mexico: Enhancing Learning with Artificial Intelligence, Applying ChatGPT in Higher Education Institutions, Professor-Student Collaboration

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ABSTRACT

This study explores the integration of artificial intelligence, specifically ChatGPT, into higher education institutions in Mexico as a means of fostering educational innovation. The focus is on leveraging ChatGPT to enhance professor-student collaboration and improve the overall learning experience. The research delves into the implementation of ChatGPT in diverse academic settings to analyze its impact on student engagement, knowledge retention, and collaborative learning dynamics. The study employs a mixed-methods approach, combining quantitative data collection through pre- and post-implementation assessments, and qualitative insights gathered from interviews, surveys, and focus groups with both professors and students. By examining the perceptions and experiences of participants, the research aims to identify the strengths and challenges associated with integrating ChatGPT into the higher education program of studies in Mexico. The findings shed light on the effectiveness of ChatGPT in facilitating interactive and dynamic exchanges between professors and students. Additionally, the study investigates the role of ChatGPT in personalized learning experiences, addressing individual student needs and learning preferences. Ultimately, this study contributes to the discourse on educational innovation in Mexico by offering insights into the transformative potential of artificial intelligence, particularly ChatGPT, in higher education. Ultimately, this study contributes to the discourse on educational innovation in Mexico by offering insights into the transformative potential of artificial intelligence, particularly ChatGPT, in higher education. The outcomes of this research provide practical recommendations for institutions seeking to integrate AI technologies to active professor-student collaboration and improve the overall educational view.

Keywords: personalized learning, collaborative learning dynamics, homeschooling, innovation in mexico

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Innovación educativa en México: mejora del aprendizaje con inteligencia artificial, aplicación de ChatGPT en instituciones de educación superior, colaboración profesor-estudiante

RESUMEN

Este estudio explora la integración de la inteligencia artificial, específicamente ChatGPT, en instituciones de educación superior en México como medio para fomentar la innovación educativa. El enfoque está en aprovechar ChatGPT para mejorar la colaboración entre profesores y estudiantes y mejorar la experiencia de aprendizaje en general. La investigación profundiza en la implementación de ChatGPT en diversos entornos académicos para analizar su impacto en el compromiso estudiantil, la retención de conocimientos y la dinámica del aprendizaje colaborativo. El estudio emplea un enfoque de métodos mixtos, combinando la recopilación de datos cuantitativos mediante evaluaciones previas y posteriores a la implementación, y percepciones cualitativas obtenidas de entrevistas, encuestas y grupos focales con profesores y estudiantes. Al examinar las percepciones y experiencias de los participantes, la investigación tiene como objetivo identificar las fortalezas y desafíos asociados con la integración de ChatGPT en el programa de estudios de educación superior en México. Los hallazgos arrojan luz sobre la efectividad de ChatGPT para facilitar intercambios interactivos y dinámicos entre profesores y estudiantes. Además, el estudio investiga el papel de ChatGPT en experiencias de aprendizaje personalizadas, abordando las necesidades individuales de los estudiantes y sus preferencias de aprendizaje. En última instancia, este estudio contribuye al discurso sobre la innovación educativa en México al ofrecer perspectivas sobre el potencial transformador de la inteligencia artificial, en particular ChatGPT, en la educación superior. Los resultados de esta investigación proporcionan recomendaciones prácticas para instituciones que buscan integrar tecnologías de IA para activar la colaboración profesor-estudiante y mejorar la visión educativa en general.

Palabras clave: aprendizaje personalizado, dinámicas de aprendizaje colaborativo, educación en el hogar, innovación en México

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INTRODUCTION

Educational systems worldwide are undergoing a transformative shift with the integration of artificial intelligence (AI) technologies. In Mexico, as in many other countries, the pursuit of educational innovation has become a focal point to enhance learning outcomes and prepare students for the challenges of the 21st century (Chiu, 2024). This study delves into the realm of AI, specifically the application of ChatGPT, in higher education institutions across Mexico, with a primary focus on fostering collaboration between professors and students. The motivation for this research stems from the recognition that traditional teaching methods are encountering challenges in meeting the diverse needs of modern learners. As students increasingly engage with digital technologies in their daily lives, the integration of AI into educational settings becomes not only relevant but imperative. Furthermore, the research is prompted by a genuine curiosity about how AI, and specifically ChatGPT, can transcend conventional boundaries to create a collaborative learning environment. The desire is to understand how this technology can act as a catalyst for increased student engagement, improved knowledge retention, and the establishment of a more interactive and personalized educational experience (Hallal et al., 2023). Traditional teaching methods often struggle to engage students who are accustomed to digital interactions in their daily lives. The existing educational paradigm may not fully capitalize on the opportunities presented by AI to create a more dynamic and personalized learning environment (Vera, 2023). This research aims to address this problem by investigating the efficacy of ChatGPT in enhancing professor-student collaboration and its impact on student engagement and knowledge retention. Furthermore, the problem statement encompasses the need to develop a nuanced understanding of the ethical considerations associated with the integration of AI in education (Vera, 2023). As AI technologies become more prevalent in higher education settings, there is a lack of comprehensive guidelines and best practices tailored to the Mexican context. This research seeks to identify and address these ethical considerations to ensure the responsible deployment of ChatGPT within academic institutions. The problem statement also acknowledges the potential challenges and barriers that may arise during the implementation of ChatGPT in higher education. These challenges could range from technical issues to resistance from educators or concerns related to data privacy. Understanding and mitigating these challenges are crucial for the successful adoption of AI technologies in the Mexican



higher education landscape. Through this research, we aspire to contribute valuable insights that can inform educational policymakers, institutions, and educators in Mexico, providing practical recommendations for harnessing the potential of AI to enrich professor-student collaboration and elevate the quality of education in the country. As we navigate the intersection of technology and education, it is essential to strike a delicate balance that maximizes the benefits of AI while upholding the ethical standards that underpin effective and responsible educational practices.

Objectives

The objective is to understand how the integration of this artificial intelligence technology can positively impact student engagement, knowledge retention, and the overall quality of collaboration between teachers and students. And identify the strengths and challenges associated with ChatGPT integration.

Literature Review

The literature review on educational innovation in Mexico, particularly focusing on enhancing learning with artificial intelligence (AI) and applying ChatGPT in higher education institutions, with an emphasis on professor-student collaboration, can explore various dimensions of this dynamic field. Below is an outline that covers key aspects and potential themes for a comprehensive literature review:

Artificial Intelligence (AI) has emerged as a transformative technology in the scientific community with the potential to accelerate and improve research in various fields. ChatGPT, a popular language model is one of those AI-based systems that is increasingly being discussed and adapted in scientific research. However, as with any technology, there are challenges and limitations that need to be addressed. This article focuses on the empowerment that ChatGPT faces in the field of higher education research. This author mentioned This article will take organic materials as examples in the use of ChatGPT. Overall, this article aims to provide information on the challenges and limitations of researchers working at higher level (Cheng, 2023). Many researchers have quickly realized and discussed the future impacts of ChatGPT on scientific writing and publishing. However, how this open access AI tool can be used to facilitate technical research has not yet been explored as is the rationale. Problem posing in higher level work so that an academic work does not lack ideas, and above all interprets communication. This article will use ChatGPT as a model to demonstrate how this technique can help in scientific research (Cheng, 2023). Higher education is crucial to producing ethical citizens and professionals globally. The



introduction of generative AI (GenAI), such as ChatGPT, has brought opportunities and challenges to the traditional education model. However, current conversations focus on policy development and evaluation, with limited research on the future of higher education. GenAI's impact on learning outcomes, pedagogy and assessment is crucial to reforming and advancing the academic workforce. This qualitative study aims to investigate students' perspectives on the impact of GenAI in higher education (Chiu, 2024).

How do ChatGPT and other forms of Generative Artificial Intelligence (GenAI) affect the way we have been conducting and evaluating academic research, teaching, and business practice? (Peres et al., 2023). Well, it doesn't affect us, the reality is that we focus our thoughts on other activities that ChatGPT cannot intervene in, for example, in practical activities, such as maintaining an engine, turning on and turning a part, or starting up some industrial equipment. I argue that ChatGPT and other generative artificial intelligence tools pose three main threats to our current education systems, creating problems of measurement, information accuracy, and skill devaluation. But when we place these threats into historical context, we see that AI tools can also empower students and level the educational playing field. In classrooms from primary to tertiary and spanning all content areas, we can help our students become critical thinkers by using ChatGPT to comprehend texts, aggregate knowledge, and understand genre conventions in prose as well as programming. The aim is to help students leverage AI as a tool that they question and critique, advancing their own comprehension, research, and composition skills in the process (Steele, 2023).

Innovating in teaching with ChatGPT

This is about making ChatGPT a trusted advisor for teachers and students at the higher level in this revolutionary ChatGPT technology that provides practical strategies to plan and execute more inclusive and effective classes. The research begins with the search for the research articles to be included in the study (Einarsson et al., 2024). This paper explores the potential of large language models, specifically ChatGPT, to reframe problems from probability theory and statistics, making them accessible to students across diverse academic fields including biology, economics, law, and engineering (Einarsson et al., 2024). The aim of this study is to enhance interdisciplinary learning by rendering complex concepts more accessible, relevant, and engaging.



Enhancing educational creativity

Findings could facilitate policymakers with insights into the determinants and initiate effective and efficient policies to improve artificial intelligence use in education, specifically ChatGPT. Artificial Intelligence (AI) and natural language processing have significantly impacted education, providing new opportunities for innovative teaching and learning practices. One of the significant breakthroughs in AI is the development of the Chat Generative Pre- Trained Transformer (ChatGPT), which can generate human-like text and conversationally respond to users' input (Habibi et al., 2023). ChatGPT has great potential to improve the quality and efficiency of learning practices, such as generating personalized content, helping with homework, and providing feedback to students (Lund & Wang, 2023). Text generation: ChatGPT can generate text in a specific style or tone, allowing researchers to easily generate draft versions of research papers, grant proposals and other written materials (Lund & Wang, 2023). Question answering: ChatGPT can be fine-tuned to provide answer to domain specific questions, making it a powerful tool for scholars to find answers quickly and efficiently.

ChatGPT 3.5

Recently, GPT-4, a new version of ChatGPT was released for use by subscribers only. Developers claimed that the new version has been improved and can perform better compared to GPT-3.5 (OpenAI et al., 2023). To students, AI chatbots represent a valuable and easily accessible resource that can greatly aid in problem-solving, summarization, and delivering instant answers to inquiries, distinguishing them from other available tools. While recent reports, as previously mentioned, have shed light on the limitations and inaccuracies of ChatGPT in specific problem-solving scenarios, particularly in general chemistry, there remains a noticeable gap in available data regarding ChatGPT's performance in addressing organic chemistry questions, particularly those requiring an understanding of structural notations (Hallal et al., 2023). The integration of generative artificial intelligence (AI) in English language teaching presents opportunities and challenges for instructors. This study explores the attitudes of higher education English language instructors towards generative AI tools, their intentions to use them and the institutional support and professional development necessary to teach and learn with them (Kohnke et al., 2023). The use of ChatGPT in education has generated considerable interest due to its potential to enrich the learning experience of students. By providing quick and personalized responses,



this system could address individual student needs, offer immediate feedback and facilitate the understanding of complex concepts. In this way, it becomes a promising tool that promotes a student's active participation and cognitive advancement by adapting to their learning pace and offering continuous support in their knowledge acquisition process (Montenegro-Rueda et al., 2023). Despite the advantages presented in it, it is essential to note that, in current times, the models have serious flaws that can significantly harm the students' learning process. Although tools like ChatGPT are, at first glance, abundant sources of information (Sarrazola-Alzate, 2023). This author tells us that artificial intelligence (AI) is a rapidly developing field. And it is based on GPT-3.5, the latest free version of ChatGPT available at the time of writing. In addition to dynamic changes in technology, the ethical implications of ChatGPT and other forms of AI are also advancing rapidly. Readers are advised to constantly check reliable sources for latest news and updates (Sethi et al., 2020). Teachers or students ask ChatGPT for ideas about how to extend students' learning after providing a summary of the current level of knowledge (e.g., quizzes, exercises). Understanding the role of study strategies and learning difficulties in students' academic performance to improve educational approaches: a proposal that uses artificial intelligence, and the most outstanding is ChatGPT 3.5 (Varela et al., 2024).

MATERIALS AND METHODS

How does ChatGPT and other forms of generative AI influence academic research and teaching-learning?

Generative artificial intelligence, such as ChatGPT, has a significant impact on academic research, teaching, and

business practices:

Academic Research:

Research Tasks: GenAI tools can be employed in various research tasks, but it is crucial to understand the best practices for their credible.

Biases: Researchers need to be aware of the biases inherent in GenAI tools and develop strategies to cope with them effectively.

Transparency: It is essential for researchers to be transparent about their use of GenAI tools in their manuscripts and clarify how these tools have been utilized.



Reliability and Validity: Continuous research is needed to assess the reliability and validity of using large language models (LLMs) in research tasks.

Teaching:

Integration into Education: Incorporating GenAI into education can enhance students' ability to solve real-world problems, such as in marketing, by training them to effectively use these tools.

Prompt Engineering: Teaching students how to craft effective prompts and evaluate GenAI output can improve their understanding and utilization of these technologies.

Ethical Use: Educators should guide students on using GenAI with integrity, transparency, and honesty, ensuring that assignments reflect original work rather than solely the output of GenAI. In summary, GenAI tools like ChatGPT have the potential to revolutionize academic research, teaching methods, and business practices by offering new opportunities for innovation, efficiency, and problem-solving. However, it is crucial for users to be aware of the limitations, biases, and ethical considerations associated with the use of these tools.

Why are certain Higher Education Professors not compatible with ChatGPT?

Higher education faculty are not incompatible with ChatGPT; In fact, this model can be useful in various areas of higher education. However, there are some aspects to consider:

Specific knowledge

ChatGPT has general and broad knowledge until its cut-off date in January 2022, but does not have access to real-time information or specific databases. Therefore, it may not be up to date on recent events or very specialized information.

Review and evaluation

The information provided by ChatGPT must be reviewed and evaluated by educational professionals to ensure its accuracy and relevance in specific contexts.

Adaptation to the educational context

The effectiveness of ChatGPT in higher education depends on how it is used and its integration with pedagogical methods. It can be a complementary tool for generating ideas, answering questions or as a source of information, but it cannot completely replace the experience and guidance of teachers.

Limitations on interaction

ChatGPT does not have the ability to understand context to the same extent as a human teacher. Although you can generate coherent responses, you do not have a deep or experiential understanding of the concepts.

Ethics and supervision

It is important to consider ethics in using technologies like ChatGPT in higher education. Furthermore, supervision and human intervention are essential to ensure a healthy and effective educational environment.

Despite these considerations, ChatGPT can be valuable in the classroom to provide instant information, support content generation, and stimulate reflection. However, it must be used in a conscious and balanced way, together with the experience and guidance of teachers, to make the most of its capabilities and overcome its limitations.

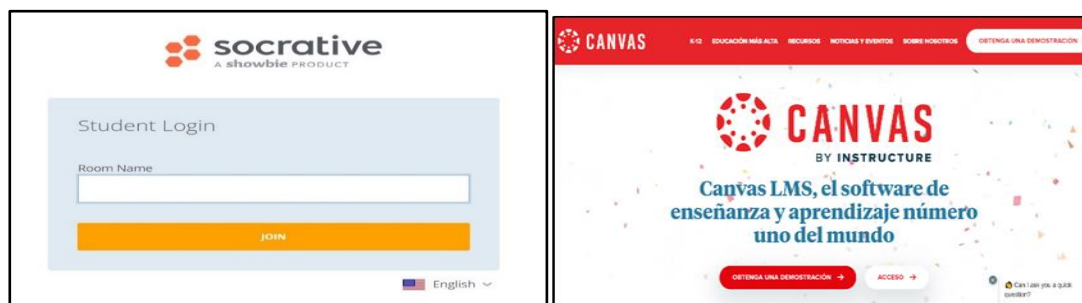
Tool applied at Higher Level

Technological tools applied in the teaching-learning process with higher education students at the Higher Technological Institute of San Andres Tuxtla, Veracruz, Mexico. (October-December 2023). The objective of this work was to investigate which technological tools are most used by students in a higher education institution and identify how this influence their educational process. The methodology was quantitative. 25 Industrial Engineering undergraduate students from the 7th semester participated. The data presented here is directly related to the use of the tools both at the school and individual level. Among the results obtained, the use of Microsoft Word as a word processor and Microsoft PowerPoint to make presentations stands out. Regarding the use of videoconferencing, very few teachers and students use this medium. The communication software that stands out the most is Meet. On the other hand, the device that students use most for their schoolwork is the computer, but in their daily lives they mainly use the smartphone. It was also possible to detect that students use more and more technological tools at school and in their common life and that these do not necessarily agree with those that the teacher recommends and reviews in class. They themselves take on the task of looking for applications that can be used for their school activities. This was demonstrated with the educational platforms they use, since they have not only used the institutional one, but others such as Canvas and Socrative stand out. In this



research it was observed that, despite the fact that there are various applications for presentations, students continue to prefer Microsoft Office programs for their schoolwork. This information is relevant for teachers and can be useful to generate and apply various strategies in the classroom, since for students these tools are necessary in their educational process and can help improve their academic performance. How can study strategies integrated into artificial intelligence (AI) tools mitigate the impact of learning disabilities on academic performance? Achieving optimal academic performance is a multifaceted challenge that requires a profound understanding of study strategies and their interaction with learning disabilities (Varela et al., 2024).

Figure 1. Software of Socrative and Canvas mode students (Source: Software Platforms).



Nowadays, talking about technological tools is nothing new. The development of digital applications has adopted a frenetic pace. In the educational context, since the computer era appeared, it is quite common for students to use several of these tools when carrying out their academic tasks. Without a doubt, these resources have made their work easier: the time they use now is less than what they used previously. Before you had to physically go to the library, for example, now it is no longer necessary to travel, since consulting information material can be done from home through a laptop or desktop computer, mobile phone, tablet, in short, any device that is connected to the Internet. That is why we call this the fourth industrial revolution, or better known as Industry 4.0, thanks to Hyperconnectivity or IoT and the IIoT. Likewise, these tools have helped in the teaching-learning process, and not only for students, but also for teachers and parents. Now parents can become more involved in teaching their children, reaching limits that they could not have imagined some time ago. It is worth mentioning that sometimes students handle applications better than a teacher, especially if the teacher is older, since they were born in a time closer to the prevailing technological development. This helps both teachers and students to be able to learn in a more dynamic way, since the teacher also learns by teaching. The level

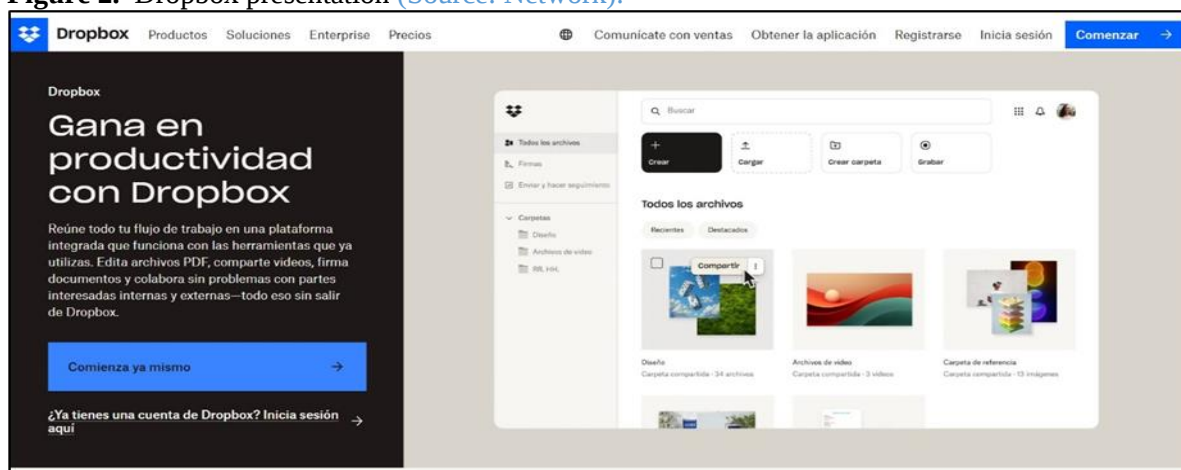
of competitiveness will be higher as information and communication technologies (ICT) are used more for projects, tasks, and exercises in class. Due to the above, this work investigates the applications that a student uses at school, whether on the laptop, smartphone, or tablet. The objective is to know these tools to make them known and that this can help some teachers when choosing which ones to use in the classroom, and if they do not know them, begin to familiarize themselves with them for their classes. This is how ICT has helped make work easy and enjoyable. On the other hand, artificial intelligence refers to the ability of machines to imitate human intelligence and perform tasks that require human intelligence, such as pattern recognition, decision making, and autonomous learning (Vera, 2023).

Goals

1. Investigate which technological tools are most used by university students in a higher education institution.
2. Identify how these tools influence your educational process.
3. State the most outstanding tools so that teachers can generate and apply various strategies in the classroom and with them help improve student performance.
4. Specify the technological tools in which the teacher must continue updating.

Digital resources supporting Higher Education

Figure 2. Dropbox presentation (Source: Network).



This software is for when you save a file to your Dropbox cloud storage, it is uploaded to our secure servers. Once the upload is complete, the file can be accessed from anywhere, using any computer, phone, tablet or other compatible device. The student who participated in this project already uses this mailbox. Dropbox is the space for all your work. You can store and share files, collaborate on projects,

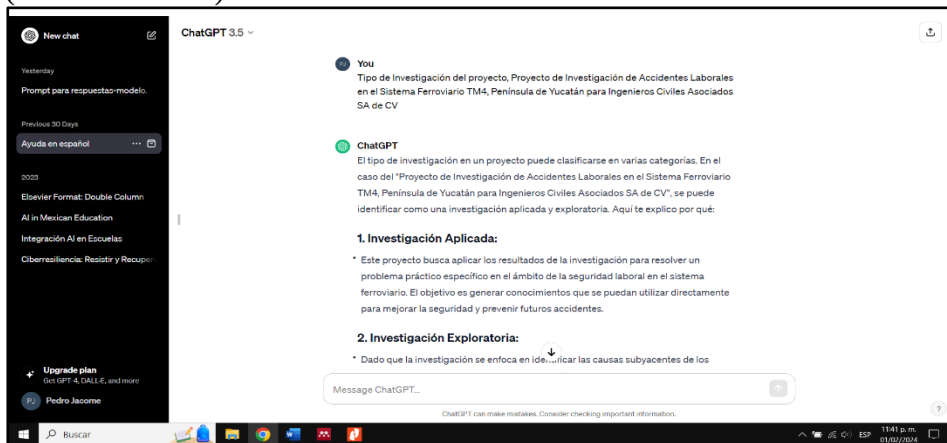
and bring your ideas to life. And all this alone or with colleagues and clients. With Dropbox, all your files are also in the cloud and available online.

Figure 3. Edpuzzle (Source: Network).



Edpuzzle; It is an online tool that allows us to edit and modify our own or online videos to adapt them to the needs of the classroom. Edpuzzle is an easy-to-use platform where you can turn any video into a lesson. With just one click, you can find video lessons created by other teachers, including formative assessment! With another click you can adapt that video by inserting your own questions or audio. This platform is also used by a group of young Industrial Engineering students from the Higher Technological Institute of San Andrés Tuxtla.

Figure 4. a) ChatGPT 3.5 personal presentation, b) Interface between human and artificial intelligence (Source: Network).



a)



b)

Because ChatGPT is a deep learning program, it is useful for extracting new information and improving its answers over time. This allows your communication strategies to be optimized and adapted to the needs of your company and your clients. The main functions that ChatGPT has are Answer questions about a particular topic. Write jokes and poems. Write detailed articles with a set number of words. ChatGPT is a free online tool, which is trained on millions of writing pages from all corners of the Internet to understand and answer text-based queries in almost any style you want.

Problematic

The excessive number of digital tools that exist today means that students can use some for school and others for personal use, in addition to causing teachers not to know which tools to use in class, whether for work, homework or Projects. The diverse use of these tools can cause the student's performance to be insufficient when submitting work, tasks, or projects. Various international reports identify education as a critical area to apply Artificial Intelligence (AI), with the potential to improve access and learning outcomes. With greater awareness of the applications and possibilities of AI in recent years, it has become the center of university debates, globally, from academic integrity to curricular adjustments and many other aspects of the learning experience. In this article we explore the main challenges and opportunities that higher education faces when integrating AI into the curriculum, with a focus on ChatGPT, from the perspective of a group of teachers (n=230). Responses are collected through a structured web-based interview. The results support the integration of AI in higher education.

RESULTS

The implementation of educational innovation in Mexico, specifically enhancing learning with artificial intelligence (AI) and the application of ChatGPT in higher education institutions with a perspective of teacher-student collaboration, has had several significant results. Here are some possible impacts:

Better Learning Experience:

The following table 1 shows a group of students from the Higher Technological Institute of San Andres Tuxtla, Veracruz, Mexico, (Higher Education), studying Industrial Engineering, who take this academic level study as a model to know what percentage of students are not familiar with one of the branches of artificial intelligence (AI), in the academic field, by asking about the use of ChatGPT 3.5. So here the table shows the percentage of knowledge of said learning tool. 75% have not used this tool through artificial intelligence (AI). and 25% if hiked.

Table 1. Percentage of ChatGPT knowledge in ES. (Own source).

No.	STUDENTS	AGE	EDUCATION	EXPERIENCE WITH ChatGPT	ACCEPTANCE BEFORE CHATGPT	ACCEPTANCE AFTER CHATGPT
1	201U0011	22	Engineering	YES	80%	100%
2	201U0012	23	Engineering	NO	40%	85%
3	201U0017	22	Engineering	YES	85%	100%
4	201U0020	21	Engineering	NO	40%	85%
5	201U0022	21	Engineering	NO	35%	90%
6	201U0023	23	Engineering	NO	39%	85%
7	231U0679	22	Engineering	NO	49%	95%
8	201U0030	21	Engineering	NO	40%	95%
9	201U0032	23	Engineering	NO	50%	100%
10	201U0033	23	Engineering	NO	48%	97%
11	201U0034	21	Engineering	NO	60%	100%
12	201U0035	23	Engineering	YES	85%	100%
13	201U0036	22	Engineering	NO	40%	90%
14	201U0037	22	Engineering	NO	20%	80%
15	201U0038	22	Engineering	YES	90%	100%
16	201U0039	22	Engineering	NO	40%	40%
		Percentages	25%			
		Percentages	75%			

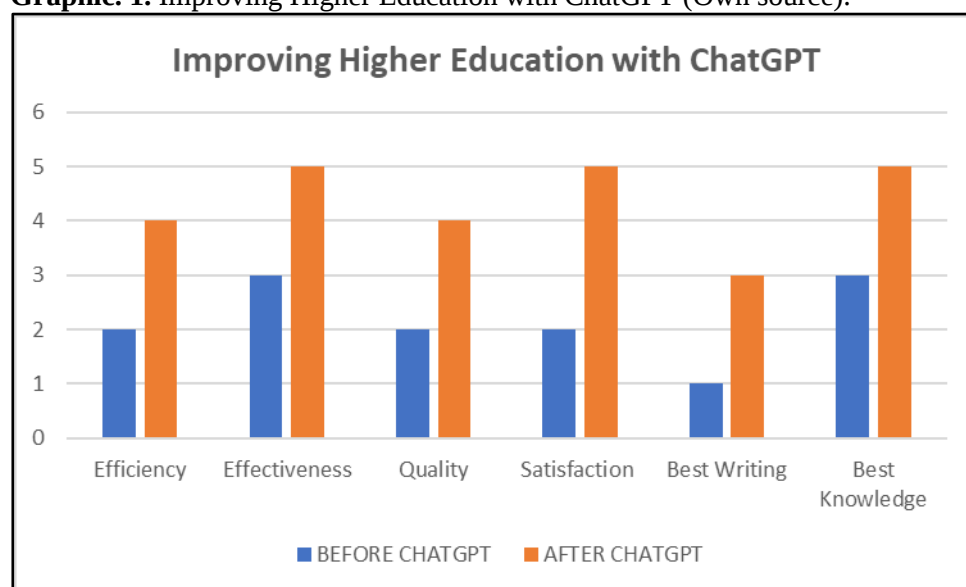
The impact of a change or improvement on a process is evaluated, and it is required to weight both the previous state (Before) and the subsequent state (After) in a table. A scale of 1 to 5 is used to assign values, with 1 indicating low impact and 5 indicating high impact. Evaluation criteria could be efficiency, effectiveness, quality, customer satisfaction, better writing and better knowledge.

Table 2. Criteria and increase in learning of ChatGPT 3.5 (Own source).

CRITERIOS	BEFORE CHATGPT	AFTER CHATGPT	INCREASE
Efficiency	2	4	2
Effectiveness	3	5	2
Quality	2	4	2
Satisfaction	2	5	3
Best Writing	1	3	2
Best Knowledge	3	5	2
Totals	13	26	13

In this example, each cell in the table has a value assigned for the state before the change (Before) of the CHATGPT knowledge and for the state after the change (After). Values are assigned by experts or based on quantitative data, depending on the availability of information and the nature of the criteria evaluated. Once you've assigned values to each cell, you can average the values for each state (Before and After) to get an overall measure of the impact of the change on each criterion. You can also perform a more detailed analysis considering the relative importance of each criterion by assigning specific weights to each of them. The following graphic 1. shows the behavior of the criteria that are evaluated to determine the increase in the use of Artificial Intelligence (AI) through ChatGPT in higher education students in Mexico. As mentioned in the name of the article with the collaboration between Teachers-students.

Graphic. 1. Improving Higher Education with ChatGPT (Own source).



Communication facilitation has been achieved

The use of ChatGPT has improved teacher-student communication, allowing instant responses to queries and facilitating online interaction, especially in virtual learning environments. clarifying that in these activities there must be values such as honesty and ethics, so that positive results are achieved.

DISCUSSION

This framework provides a solid foundation for a technical and thoughtful discussion about how artificial intelligence, specifically ChatGPT, can improve learning in higher education institutions and promote more effective collaboration between faculty and students. A technology discussion on enhancing learning with artificial intelligence (AI), specifically the application of ChatGPT in higher education institutions and its impact on teacher-student collaboration, could address several key aspects. Here is an outline of how that discussion might be structured.

Advantages of the ChatGPT application in learning

Instant information access: Students can get answers to their questions immediately, encouraging exploration and self-directed learning. **Personalization of learning:** ChatGPT can adapt to the individual needs of students, providing resources and explanations tailored to their level of understanding and learning style. **Supporting the teaching process:** Teachers can use ChatGPT as a complementary tool to provide quick feedback and additional resources to students. **Encouragement of creativity and reflection:** Interacting with ChatGPT can inspire students to explore new ideas and perspectives, as well as reflect on their own learning process.

Teacher-student collaboration

Real-time support: ChatGPT can facilitate communication between teachers and students outside of class hours, giving students access to additional guidance and resources when they need it most. **Encouraging dialogue:** Interaction with ChatGPT can serve as a starting point for deeper classroom discussions, stimulating critical thinking and debate. **Student Empowerment:** By providing students with tools to search and understand information independently, ChatGPT can foster a sense of autonomy and responsibility in the learning process.

With these own comments in the discussion, versions of other authors are demonstrated in the opinion about the empowerment of ChatGPT in higher education in Mexico. To conclude, ChatGPT can provide



assistance in many new research areas, and we are still at the very early stage of exploring its application scope. I have no doubt that AI tools will become a game-changing player in all fields, including our scientific society. However, there are many challenges in terms of research purposes. So far ChatGPT is limited by computational constraints, the ability to point out inaccurate information or false faces, and inferential capability for scientific research. All those limitations may lead to misunderstandings or misinterpretation. To address these challenges, researchers are immersing themselves to improve the accuracy and reliability of the model (Cheng, 2023).

CONCLUSION

Add conclusion here. Make sure to address that all objectives are met and emphasize of unique research contribution (10 font)

Recap of the benefits and challenges of applying ChatGPT in higher education institutions. as well as encouraging an ethical and thoughtful implementation of AI in the educational environment, with a focus on improving the learning experience and promoting collaboration between teachers and students. This framework provides a solid foundation for a technical and thoughtful discussion about how artificial intelligence, specifically ChatGPT, can improve learning in higher education institutions and promote more effective collaboration between faculty and students.

This article illuminates the impressive potential of using ChatGPT in this context, since 75% of respondents from a population of higher-level students have not been familiar with this technological tool and 25% require more updating, but are familiar. . This highlights the potential of ChatGPT as a powerful tool for educators, enabling the creation of personalized educational content that can resonate with students from a wide range of academic backgrounds.

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