AI Chatbots Use Among Bachelor Students in Morocco : Perspectives and Concerns

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Abstract—As technology is continuously advancing, chatbots have emerged as a promising tool in various domains, including higher education. This qualitative study delves into the utilization of chatbots among bachelor students in Morocco, aiming to comprehensively explore their perspectives, experiences, and concerns regarding the integration of chatbot technology into their academic lives. Through in-depth interviews with a purposive sample of bachelor students from diverse academic disciplines in Moroccan universities, the research uncovers multifaceted insights into the students' interactions with chatbots. The findings' analysis reveals a nuanced understanding of the benefits and challenges associated with the use of chatbots in Moroccan academia, and sheds light on key considerations for educators and policymakers to potentially leverage this technology effectively.

Keywords— chatbots; chatgpt; artificial intelligence; higher education; Morocco

I. INTRODUCTION

In recent years, the proliferation of artificial intelligence (AI) technologies has transformed various aspects of our daily lives with the introduction of chatbots. These software applications use text or text-to-speech to conduct an online chat conversation, simulating human interaction (Sakshi 2022). They can be used in differing contexts, such as providing information to students and parents about a college (Gupta 2022), bridging the gap between technology and learning (Sakshi 2022), and enhancing customer service in business (Lyngdoh 2022). The use of AI and chatbots in education has been a topic of increasing interest among researchers, with studies highlighting their potential benefits and challenges.

Okonkwo (2021) and Yang (2019) both underline the potential of chatbots to provide personalized services in education, while also acknowledging the technical challenges. Mageira (2022) and Yang (2022) provide specific examples of AI chatbots in action, with Mageira's AsasaraBot demonstrating effectiveness in teaching foreign languages and cultural content, and Yang's Ellie chatbot encouraging student engagement in English conversation practice. These studies collectively suggest that while AI and chatbots hold promise in education, their implementation requires careful consideration of technical and pedagogical factors.

This paper seeks to address this gap by conducting a qualitative investigation into the use of AI chatbots among bachelor students in Morocco, with a particular focus on their perspectives and concerns. By exploring students' experiences with chatbots through in-depth interviews, the study aims to elucidate the complex interplay between technology applications and higher education, exploring the perceptions of Moroccan bachelor students on the use of chatbots, inspecting the benefits they have presented to them, as well as all the challenges, limitations and concerns that is part of their experience. By examining the nuanced dynamics of students' interactions with chatbots, this research aims to provide valuable insights for educators, policymakers, and developers seeking to harness the potential of chatbot technology to enhance student learning outcomes and experiences in Morocco.

A. On the use of AI chatbots among students:

A range of studies have explored the use of chatbots among students, with a focus on their potential in academic settings. Wolff (2019) and Pantelić (2023) both found that students are generally open to using chatbots for academic purposes, with a particular interest in organizational support and information acquisition. Chen (2021) and Clarizia (2018) further developed this concept, creating question-answering systems and education support systems respectively, and demonstrating their utility in e-learning environments. These studies collectively suggest that chatbots have the potential to enhance the student experience in higher education.

B. On the use of AI chatbots in Morocco

The use of chatbots in Morocco is a growing area of interest among researchers, particularly in the field of educational and vocational guidance (Zahour, 2020). These chatbots offer benefits such as personalization and 24/7 availability, making them a valuable tool in this context. However, further research is needed to explore the specific applications and potential impact of chatbots use in Morocco.

II. METHODOLOGY

The concept of qualitative methods is explored by Maanen (1979), who emphasizes their interpretive nature and focus on meaning rather than frequency. McCaslin (2003) provides a practical framework for framing a qualitative research study, highlighting the importance of selecting an appropriate methodology and addressing potential biases. McLean (1997) offers a review of Miller and Fredericks' work on qualitative research methods, although the specific content of the review is not provided. Grzeszczyk (2018) discusses the role of qualitative evaluation methods, particularly in the context of project outcomes and the application of intelligent systems. These studies collectively highlight the interpretive, methodological, and evaluative aspects of qualitative research.

In the present study, a qualitative survey methodology was employed to explore the experiences and perceptions of bachelor students regarding the use of chatbots. Semi-structured interviews were conducted with a purposive sample of bachelor students from diverse academic disciplines in Morocco. The interviews were audio-recorded and transcribed verbatim for analysis.

A. Content analysis:

Content analysis is a versatile research method that allows for the systematic and reliable analysis of qualitative data, enabling the generation of generalizations (Haggarty, 1996). This flexible methodology is employed in a variety of research frameworks, including qualitative, quantitative, and mixed modes, and can serve both quantitative and qualitative research purposes (White, 2006).

B. Participants:

In order to be eligible for participation in the study, students were required to meet three inclusion criteria: first, they had to be at least 18 years of age. Second, they needed to be students affiliated with a Moroccan higher education institution. Third, they were expected to possess current knowledge and experience in using chatbots.

Prior to engaging in interviews or any other research activities, participants were provided with information regarding the study's purposes to obtain their informed consent, adhering to ethical research standards.

C. Data collection:

In the course of March 2024, the researchers conducted interviews with a total of 25 bachelor students to explore their perspectives on using chatbots in their education amidst the digital era in Morocco. Table I. details the demographic information of the informants, encompassing their gender, age, as well as the date and time of the interviews. Among the 25 participants, students distributed with ten males and fifteen females, aged between 18 and 22.

TABLE I.　　DEMOGRAPHIC INFORMATION OF THE INFORMANTS

Informant N°	Gender	Age	Date and time of the interview
1	Female	20	March 9th, 2024 at 3:00 pm
2	Male	19	March 9th, 2024 at 3:20 pm
3	Female	22	March 9th, 2024 at 3:50 pm
4	Female	18	March 9th, 2024 at 4:15 pm
5	Female	21	March 9th, 2024 at 4:40 pm
6	Male	20	March 9th, 2024 at 5:00 pm
7	Female	19	March 10th, 2024 at 2:00 pm
8	Male	18	March 10th, 2024 at 2:30 pm
9	Female	19	March 10th, 2024 at 3:00 pm
10	Female	20	March 10th, 2024 at 3:20 pm
11	Female	21	March 10th, 2024 at 3:45 pm
12	Male	19	March 10th, 2024 at 4:00 pm
13	Male	18	March 10th, 2024 at 4:30 pm
14	Male	20	March 13th, 2024 at 4:00 pm
15	Female	20	March 13th, 2024 at 4:30 pm
16	Female	20	March 13th, 2024 at 4:50 pm
17	Male	21	March 14th, 2024 at 1:00 pm
18	Female	19	March 14th, 2024 at 1:30 pm
19	Female	21	March 14th, 2024 at 2 pm
20	Male	18	March 14th, 2024 at 2:40 pm
21	Male	20	March 14th, 2024 at 3:00 pm
22	Male	21	March 16th, 2024 at 3:00 pm
23	Female	19	March 16th, 2024 at 3:30 pm
24	Female	22	March 16th, 2024 at 4:00 pm
25	Female	20	March 17th, 2024 at 5:00 pm

The protocol behind the interviews consisted of open-ended questions enabling participants to offer comprehensive and nuanced feedback on the focal areas. Interviews were conducted in both French and English languages, offering participants the flexibility to opt for either in-person or remote sessions according to their preferences. The results obtained in French were later translated in English language for inclusion in this paper.

III. FINDINGS AND DISCUSSION:

The analysis revealed several key themes related to the use of chatbots among bachelor students in Moroccan universities, which we categorized into the following study focus points, with example responses :

A. Usage Patterns and Experience:

Students participating in the study primarily use chatbots for accessing course materials, meeting assignment deadlines, and interactive learning activities. Among other chatbots, ChatGPT is the one the participants have named the most frequently, with Perplexity[1] coming in as a close second.

It is nessecary to mention that ChatGPT is a powerful language model developed by OpenAI, based on the GPT architecture, and trained on a massive dataset of text. It can generate human-like text in response to a given prompt, making it suitable for a wide range of applications such as chatbots, language translation, text completion, and question answering (Sarode 2023, Mijwil 2023)

These chatbots are seen as convenient tools for on-the-go access to information and for upgrading the learning experience through interactivity.

Informant 7:
"ChatGPT is really my go-to whenever I have a question about anything."

Informant 19:
"I have the ChatGPT app on my phone and it's really the one I use the most. Even more than social media apps, if I'm being honest"

B. Positive Aspects and Benefits:

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[1] "an alternative to traditional search engines, where one can directly pose their questions and receive concise, accurate answers backed up by a curated set of sources."
- source: https://www.perplexity.ai/hub/faq/what-is-perplexity

Convenience and efficiency are highlighted as major benefits of using chatbots, particularly for managing stress-inducing coursework and staying organized.

Chatbots offer additional support outside of class hours, contributing to a more flexible and accessible learning environment. Chatbots also positively impact students' workflow by helping them manage their workload more effectively and encouraging proactive engagement with course materials and assignments.

Informant 3:
"I'm way less stressed about assignments and deadlines since I started using chatbots"

Informant 14:
"it's almost like I have my own personal assistant ready at all times."

C. Challenges and Limitations:

Chatbots are generally trusted among students for basic queries and straightforward questions, but are viewed cautiously for more complex inquiries. Issues with chatbots' comprehension, accuracy and reliability are noted, especially when questions are phrased informally or when seeking help on complex topics.

Concerns are repeatedly raised regarding the risk for incorrect or outdated information provided by chatbots especially as students value accuracy and reliability in chatbots' responses, especially in academic contexts where the information provided can impact further learning outcomes.

Informant 11:
"I get so annoyed when a chatbot doesn't understand what I need, and then I have to keep rephrasing."

Informant 25:
"it took me quite some time to realize that the references I get from ChatGPT are imaginary. Non existent. That was a disappointment."

D. Security Concerns and Reservations:

Privacy and data security concerns are pointed out, along with a caution against over-reliance on chatbots potentially hindering critical thinking skills among the participants.

Often forced to share personal data, especially for sensitive assignments or complex topics, the students worry about the level of security that is granted by

chatbots providers and wonder how much trust can they grant them.

On the other hand, the risk of developing an over-reliance on chatbots with excessive near-daily use call for caution as well.

Informant 2:
"I hate that my brain gets automatically turned off whenever I'm chatting with one (a chatbot)."

Informant 8:
"I get paranoid sometimes with how much personal information I'm sharing bot and I panic."

E. Desired Improvements:

Participating students express a wishful desire for chatbots with personalized features and enhanced capabilities for interactive learning, suggesting a need for more tailored and adaptive functionalities.

Integrating chatbots with a broader range of learning tools and resources is seen as beneficial for enhancing student engagement and learning outcomes.

Informant 25:
"I would love it if I could chat with a bot that understands Moroccan dialect. "

Informant 13:
"I am waiting for all the advanced features you need to pay for now to be accessible with the free version"

The findings' analysis indicates that while students appreciate the convenience and recognize the support offered by chatbots in their studies, areas for improvement are pointed out in terms of reliability, accuracy, and customization to better meet their needs and academic preferences. Balancing technological advancements while preserving human interaction and critical thinking skills is crucial for optimizing the integration of chatbots into the Moroccan academic environments.

The findings call attention to the dual nature of students' experiences with chatbots, highlighting both the benefits and challenges associated with their use in academic settings. While chatbots grant 24/7 convenience and engagement, concerns regarding reliability, privacy, and the risk of over-reliance call for careful consideration. Balancing the integration of chatbot technology with the preservation of human-centric learning environments is essential for maximizing the potential benefits while mitigating potential drawbacks.

IV. CONCLUSION

Based on the study findings, chatbots emerge as a promising educational tool. The participating students held favorable views regarding their integration into education, noting their potential to alleviate their workload by handling routine queries. Nonetheless, concerns surfaced regarding the accuracy of information provided, the potential decline in personal interaction with their educators, and the imperative for data privacy and security protection as well as caution with a risk of over-reliance. To ensure chatbots ethical and healthy implementation in Moroccan universities, it falls on educators and policymakers to carefully weigh the advantages and drawbacks, guiding students and educating them on the "right" and effective ways of using chatbots in particular, and artificial intelligence applications in general. Addressing concerns entails enhancing chatbots information accuracy, preserving educator-student interaction and individual critical thinking, as well as prioritizing data privacy. This study provides crucial insights into stakeholder perspectives on chatbots in Moroccan higher education. Future research could explore long-term effects of interactive chatbots and compare their efficacy with traditional teaching methods.

Focusing on Moroccan universities, this study delves into students' perceptions of chatbots, at bachelor level, offering insights not extensively explored in the Moroccan educational landscape. By spotlighting students' experiences, opinions, and concerns, this research builds upon existing literature on chatbots, providing a more solid foundation for further investigations. Researchers can utilize these findings to explore uncharted territories, such as pedagogical approaches maximizing chatbots benefits or their impact on diverse subject areas and student cohorts.

Acknowledging limitations, the study's findings may not be generalizable beyond Morocco, given its limited sample size. Future research should – ideally - incorporate diverse and larger samples. And while focusing on students' perceptions is insightful, exploring other stakeholders' views could provide a holistic understanding. Notably, educators, administrators or parents. Further investigations could also explore diverse applications of chatbots in education beyond immediate feedback. Addressing concerns regarding accuracy, personal interaction, and data security necessitates future research efforts. While this study contributes significantly, continued research is an imperative to fully unravel chatbots potential in educational settings, informing evidence-based implementation strategies and fostering innovation in educational technology, not only in Morocco, but in further areas of the world.

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