



Design and Evaluation of an AI Chatbot for Student Academic Advising

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ABSTRACT

This research aims to design and evaluate an AI chatbot for student academic advising at Arellano University – Jose Abad Santos based on user feedback, usability testing, and expert analysis. The study proposes practical recommendations and knowledge base improvements to support ongoing efforts in digital student services, student engagement, and satisfaction.

Keywords– AI chatbot, academic advising, student support, usability, artificial intelligence

INTRODUCTION

The current technological revolution is a significant development in education, particularly in higher education, where digital tools are widely used. Artificial Intelligence (AI) is one such technology, offering chatbot assistance and information to users. Chatbots are software designed to interact with humans and respond quickly, making them important in many fields, including education.

Academic advising is important to higher education because it guides students through issues with courses, curricula, majors, and related matters. However, academic advising is often delayed by staffing shortages and high demand for advising services. This issue makes it hard for students to receive academic information or meet with their advisors when needed.

However, AI-powered chatbots may address this issue by providing academic information, offering 24/7 availability, and answering common inquiries about academic matters, enrollment, schedules, and other student services. Chatbots in higher education have been widely explored and implemented in recent years, but most studies focus on other aspects of higher education, and none focuses on their use in academic advising, at least in this specific context. Thus, further research should be conducted to determine if AI chatbots can serve as useful tools in student academic advising and, if so, to what extent.

Hence, this study aims to design and evaluate an AI chatbot for student academic advising. Specifically, the study took place at Arellano University – Jose Abad Santos and assessed the usability of an AI chatbot based on users' feedback regarding the bot's general impressions, functionalities, usefulness, and efficiency.

LITERATURE REVIEW

AI chatbots are becoming increasingly useful in education because they provide easy access to information and support students [1]. Studies also found that chatbots can provide fast, personalized, and engaging support, although some still have usability issues [2][6][18].

Students were also found to be satisfied with AI chatbots, although some improvements were still needed [4]. Students were more likely to use AI-based voice assistants when they found them useful and enjoyable [5]. Chatbots can also provide quick responses and easier access to student services [6].



Academic advising services are there to help students with their course of study and other related matters, and effective advising has been linked to better grades [17]. One study found that AI can support advisers and provide students with academic information when needed [7].

One study of a chatbot in Saudi higher education examined its influence on students' motivation and learning strategies [19]. University chatbots have also been used for admission and student services [16][20].

Usability is important because students need to use chatbots easily and understand their responses. Research found that some educational chatbots still have usability problems [2]. A health chatbot used during the COVID-19 pandemic was easy to use for accessing information, although some users still experienced problems [21].

Academic advising chatbots were also reported to improve student satisfaction and reduce adviser workload [15], while early users of JayBot found it easy to use [16] and students learned another advising chatbot quickly [24]. Several advising chatbots have also been designed and tested [10][11][12].

AI chatbots still have challenges such as accuracy and ethical concerns [1]; for example, a bilingual advising chatbot matched user intents with 80% accuracy in English and 75% in Arabic [9]. Studies on ChatGPT found that while it can provide clear academic information, human advisers are still better at handling practical academic decisions [13][14].

Some universities have also not yet realised the full potential of chatbot systems [20]. Other problems include incorrect answers and internet connection issues [8]. Chatbots are also seen as most effective when they balance quick assistance with human expertise [6].

A review of previous studies identified different challenges in using AI chatbots in education and recommended further research [3][22]. Another study found that emotionally intelligent chatbots can use AI and natural language processing to identify users' emotions [25]. Other research also discussed the use, benefits, and challenges of chatbots in education [23].

METHODOLOGY

A. Research Design

The study adopted a developmental research design and employed a quantitative survey to assess the AI chatbot for student academic advising. Respondents evaluated the designed chatbot based on their perceptions after testing it, assessing the prototype's usability, usefulness, functionality, and efficiency.

B. Respondents

The planned sample was 60 respondents: 50 college students and 5 faculty members from Arellano University – Jose Abad Santos, and 5 IT professionals. The final sample was 61 (51 students, 5 faculty members, and 5 IT professionals) because one additional eligible student completed the questionnaire while the form was open and the response was retained. The students viewed the chatbot from the target audience's perspective, while the faculty members and IT professionals offered perspectives on its academic advising and technical aspects.

C. Sampling Design

The study used purposive sampling because it enables the researchers to identify the respondents best suited to the research problem: college students as the intended users, faculty members for the academic advising perspective, and IT professionals for the technical perspective. Respondents were invited through direct in-person requests, and those who tested the chatbot and completed the questionnaire were included; all 61 responses received were analyzed. Because the sampling was non-random and limited to one university, the findings are not intended to be generalized beyond this setting.

D. Research Instrument

The study used a self-developed, researcher-made questionnaire administered through Google Forms after respondents tested the chatbot prototype. It had five criteria (Functionality; Usefulness; Ease of Use and Usability; Efficiency and Response; and Accuracy, Satisfaction, and Overall Experience) with six five-point Likert indicators each (30 in all), plus open-ended items on liked features, difficulties, and suggestions.

Content validity was established through review by three experts (two IT professionals and one faculty member), and minor phrasing adjustments were made for clarity. Internal consistency, assessed with Cronbach's alpha, was $\alpha = 0.89$ (range: 0.84-0.93), indicating good reliability.

E. Data Gathering

The researchers first developed the AI chatbot prototype according to the identified needs for student academic advising. The selected respondents then tested and interacted with the prototype and answered the Google Forms questionnaire. The researchers collected and compiled the responses to analyze and evaluate the AI chatbot.

F. Statistical Treatment of Data

To interpret the results, the researchers used statistical data to indicate respondents' perceptions and evaluations of the AI chatbot for student academic advising. The statistical measures used in the study included percentage, weighted mean, and Likert scale analysis, and Cronbach's alpha was used to examine the internal consistency of the questionnaire. These statistical tools helped the researchers evaluate the developed AI chatbot based on respondents' experiences using the prototype.

Percentage – used to denote what percentage of respondents chose a particular option when completing the questionnaire. It was used to identify common trends in the survey results.

$$\text{Percentage} = \frac{f}{n} \times 100$$

Where:

f = frequency

n = number of responses

Weighted Mean - was utilized for the Likert scale. In this case, each item was assigned a specific weight, and the weighted mean of all responses indicated the average score given by the respondents. This was used to measure the chatbot's evaluation based on usability, usefulness, functions, accuracy, ease of use, and overall satisfaction.

$$W = \frac{\sum fx}{n}$$

Where:

f = frequency

x = scale value

$\sum fx$ = sum of the products of frequency and scale value

n = total number of responses

Likert Scale— In this study, the level of evaluation and satisfaction of the participants was measured based on their responses to the Likert scale. This scale included five levels, from excellent to very poor, enabling the

researchers to evaluate and interpret the results from the participants' perspective and understand their views on the AI chatbot for student academic advising.

Table 3.1: Scale, Range, and Verbal Interpretation

Verbal Interpretation	Scale	Range
Excellent	5	4.50 – 5.00
Very Good	4	3.50 – 4.49
Neutral	3	2.50 – 3.49
Poor	2	1.50 – 2.49
Very Poor	1	1.00 – 1.49

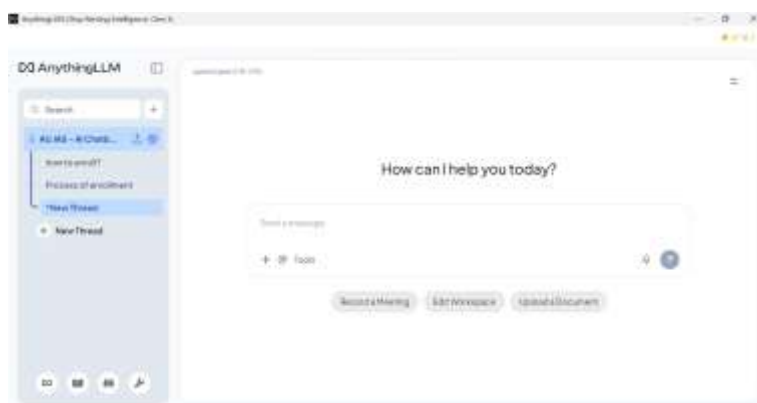
G. Technical Implementation of the Chatbot

The chatbot was built in AnythingLLM (version 1.16.1) using a workspace named “AU JAS – AI Chatbot” and the Qwen3.8-27B language model (qwen/qwen3.8-27b). The knowledge base was prepared by uploading source documents such as enrollment procedures, course offerings, and academic policies of Arellano University – Jose Abad Santos to the workspace, where each document was split into text chunks, converted to vector embeddings, and stored in the workspace’s vector database.

For each question, the most similar chunks were retrieved and passed to the model together with the question, so answers were generated from school content (retrieval-augmented generation). To reduce inaccurate guidance, answers were grounded on the workspace documents, and the researchers could correct the knowledge base by adding or editing documents. The system remains a support tool, not a replacement for human advisers (see Limitations).

H. System Storyboard

Figure 3.1: Storyboard (chat screen, workspace, conversation threads, message box, and tools)



The chat screen was the first page a user saw when opening the application. Users were greeted with the message “How can I help you today?”. On the left, the user could see the AU JAS – AI Chatbot workspace, which kept academic advising content and conversations in one place. Below the workspace were conversation threads such as “how to enroll?” and “Process of enrollment.” Here, the user could reopen a previous thread to continue it or click New Thread to start a new topic. To ask a question, the user typed a message in plain



language in the “Send a message” box, or used the microphone for voice input, and then pressed the arrow button to send it. The chatbot’s reply then appeared in the conversation, where the user could ask follow-up questions in the same thread. Below the message box, the Record a Meeting, Edit Workspace, and Upload a Document shortcuts, along with the Tools option, helped the researchers manage the chatbot, such as adding documents to its knowledge base.

RESULTS AND DISCUSSION

This section presents the results of the evaluation of the developed AI chatbot for student academic advising and interprets the findings.

A. Presentation and Analysis of Data

The AI chatbot was evaluated by 61 respondents comprising 51 college students (83.6%), five faculty members (8.2%), and five IT professionals or experts (8.2%), thus providing both end-user and expert views. Most respondents were female (62.3%) and aged 18–24 years (70.5%), and 91.8% had used an AI chatbot for academic-related questions before the evaluation. Table 4.1 provides their profile.

Table 4.1: Profile of the Respondents

Profile	Category	f	%
Respondent Group	College Student	51	83.6
	Faculty Member	5	8.2
	IT Professional / Expert	5	8.2
Age Group	Below 18	2	3.3
	18–24	43	70.5
	25–34	8	13.1
	35–44	3	4.9
	45 and above	5	8.2
Gender	Female	38	62.3
	Male	20	32.8
	Prefer not to say	3	4.9

The evaluation covered five criteria, each with six indicators, for a total of 30 indicators. Table 4.2 presents the weighted mean and verbal interpretation obtained for each criterion.

Table 4.2: Summary of the Evaluation by Criterion

Evaluation Criterion	WM	VI
Criteria 1 - Functionality	4.14	Very Good
Criteria 2 - Usefulness	4.22	Very Good

Criteria 3 - Ease of Use and Usability	4.41	Very Good
Criteria 4 - Efficiency and Response	4.32	Very Good
Criteria 5 - Accuracy, Satisfaction, and Overall Experience	4.27	Very Good
Grand Weighted Mean	4.27	Very Good

The grand weighted mean values in Table 4.2 include a grand weighted mean of 4.27, which is considered Very Good. The highest value of 4.41 was obtained for ease of use and usability, followed by efficiency and response of 4.32, accuracy, satisfaction, and experience of 4.27, and usefulness of 4.22. The lowest value was for functionality (4.14).

At the item level, the highest-rated indicator among the 30 items was that the chatbot is easy to use (4.52), followed by the ease of entering questions into it (4.48). The lowest ratings were for the chatbot's ability to respond properly to academic questions (4.05) and for the proper functioning of its features during the interaction (4.13), both under Functionality. On the single overall rating item, 45.9% of the respondents rated the chatbot as Excellent and 36.1% as Very Good, giving a mean of 4.28, with no respondent rating it below Good.

The most commonly reported features respondents liked most were the system's ease of use and simple interface (22 mentions), response speed (18), and fast access to school-related information (11). The most frequent complaint was that users did not experience any difficulties while using the portal (21 mentions). However, those who reported issues mentioned unclear responses (14), dependence on a stable connection (9), difficulty understanding short or unclear questions (5), and a lack of necessary information on particular courses (4). The most frequent suggestion was to expand the chatbot's knowledge base with more school, course, and department information (14), followed by improving its accuracy and understanding of user intent (9).

B. Discussion

The results showed that the developed AI chatbot received an overall Very Good rating. The strongest ratings were for ease of use, usability, and efficiency, indicating that respondents could operate the chatbot with little learning and receive answers quickly. This was consistent with the open-ended responses, where simplicity and speed were the most frequently mentioned strengths.

The weakest area was functionality, particularly the correctness of the responses to specific academic questions. The qualitative data explained this pattern, as the most commonly reported difficulties were vague or non-specific answers, misunderstanding unclear questions, and incomplete information for certain courses. This suggested that respondents perceived the limitation as the prototype's knowledge base coverage and precision, rather than its interface or speed.

Taken together, the findings indicated that the AI chatbot is acceptable as a support tool for student academic advising, especially for common, frequently asked academic questions and when an adviser is not immediately available. To strengthen it further, expand the knowledge base to cover more courses, departments, and campus services; improve its handling of short or unclear questions; and reduce its dependence on a fast internet connection.

C. Limitations

The findings should be interpreted with caution. The evaluation involved a single institution and a small purposive sample (61), which limits generalizability. The results rest on subjective ratings from a researcher-made questionnaire; no objective measures of response accuracy, query resolution, or response time were taken. The chatbot also depended on a stable internet connection (reported by nine respondents) and, as an LLM-based system, may give incomplete or incorrect answers when information is missing from its



knowledge base; respondents rated its ability to answer academic questions lowest (4.05) and reported unclear responses (14) and missing course information (4). Because inaccurate guidance could affect enrollment decisions, it should be used alongside human advisers. Future studies should verify answers against official sources through objective accuracy testing, use larger multi-institution samples, and test performance under varying connectivity.

CONCLUSION

The evaluation of the developed AI chatbot prototype was highly satisfactory, with the overall “Very Good” user impression (grand weighted mean 4.27). The participants noted that the technology was easy to use and provided sparring advice efficiently. However, the respondents also reported several drawbacks, including a lack of information on specific topics and insufficient accuracy in providing answers. Therefore, it is recommended to further develop the technology by expanding the topics covered by the chatbot and improving its natural language processing accuracy to make it a valuable tool for academic advising.

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