

The Perceived Value of Chatbot Support in Enhancing College Student Self-Efficacy



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ABSTRACT: In the ever-evolving educational landscape, the integration of technology is pivotal for shaping college students' learning experiences. Artificial Intelligence (AI)--powered chatbots stand out as versatile virtual assistants, providing personalized support. This research delves into the intricate relationship between college students and chatbot support, exploring its nuanced impact on self-efficacy at Opol Community College. The study is grounded in Bandura's self-efficacy theory, the study employs a descriptive-causal design with purposive sampling, encompassing 304 participants. Demographic analysis unveils a diverse respondent population, forming the basis for nuanced interpretations of subsequent findings. While chatbot support receives positive acknowledgment, revealing strengths in interaction and query resolution, areas for improvement in academic support usage are identified. Moreover, in-depth self-efficacy analyses across domains showcase positive beliefs, offering a comprehensive understanding with targeted areas for enhancement. Grouped analysis based on technology use demonstrates students' overall confidence in adapting to new technology, coupled with specific items earmarked for improvement. Regression analysis emphasizes the statistically significant impact of chatbot support on self-efficacy, highlighting the transformative potential of these AI-driven tools. The study concluded that useful information for schools and developers on how to improve chatbot features, address concerns, and increase students' confidence in specific subjects ultimately creating a better educational environment. Recommendations emanating from these findings provide actionable insights for educational stakeholders. Institutions and developers are urged to refine chatbot features, addressing identified weaknesses in academic support usage. Additionally, interventions should focus on enhancing specific self-efficacy domains flagged for improvement. This study contributes valuable insights to the discourse on technology integration in education, guiding institutions and developers to tailor interventions that positively shape college students' self-efficacy and learning experiences.

KEYWORDS: Self-efficacy, Chatbot support, Educational technology, Artificial Intelligence, Higher education, Student experiences

I. INTRODUCTION

In today's rapidly evolving educational landscape, the integration of technology has become increasingly instrumental in shaping the learning experiences of college students. Among the innovative technologies making inroads into higher education, Artificial Intelligence (AI)--powered chatbots have emerged as versatile virtual assistants that offer timely and personalized support to students. These AI-driven chatbots, equipped with Natural Language Processing (NLP) capabilities, are designed to provide real-time assistance with academic queries, offer guidance on coursework, and facilitate access to educational resources. While the implementation of chatbot support in higher education institutions is gaining traction, there remains a paucity of research exploring its impact on one critical dimension of student success—self-efficacy (Adamopoulou & Moussiades, 2020).

This research study focuses on Opol Community College, where the perceived value of chatbot support in enhancing college student self-efficacy becomes the focal point of investigation. Self-efficacy, as postulated by Bandura (1977), encompasses an individual's belief in their ability to perform tasks and attain desired outcomes. Within the educational context, self-efficacy plays an integral role in shaping students' academic choices, motivation, persistence, and overall performance. Hence, understanding the dynamics of how chatbot interactions may influence college students' self-efficacy beliefs in Opol Community College holds immense significance. This research seeks to delve into this relatively unexplored territory, aiming to explore students' perceptions regarding the role of chatbot support in bolstering their confidence and self-belief across various academic domains (Gonda et al., 2018).

By conducting a comprehensive investigation into the relationship between chatbot usage and student self-efficacy, this study not only adds to the growing body of knowledge on AI in education but also provides practical insights that can inform educational technology strategies and initiatives at Opol Community College. Moreover, it sheds light on the unique context of a

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community college, where the potential benefits of chatbot support may vary from those in traditional four-year institutions. As such, this research contributes to a deeper understanding of the role of AI-driven educational tools in fostering student self-efficacy and ultimately promoting success in the distinct setting of Opol Community College

II. METHODOLOGY

The study used a descriptive-causal research design. Descriptive-causal research design is a type of research methodology that aims to explore and understand the relationships and influence between different variables without manipulating them. This design involves observing and measuring variables as they naturally occur and then examining the associations or correlations between them. It is beneficial when researchers seek to describe the characteristics of a population or phenomenon and determine whether there are statistically significant relationships between variables.

The research was conducted in Opol Community College. The Community College started its operation with two tertiary courses leading to degree programs in Bachelor of Science in Elementary Education, with twenty (20) enrollees, and Business Administration, with sixty-three enrollees. The College aimed its focus not just on academic learning but also on occupational skills, hence, the Technical-Vocational courses, such as Food Technology, Welding, Automotive, Civil and Electrical Technology to name a few, formerly administered by the Opol National Secondary Technical School, is now under the administration of the Opol Community College per Memorandum of Agreement between the latter and the Technical Education and Skills Development Authority (TESDA), which took effect in the School Year 2004-2005.

Purposive sampling was used in the study. This strategy is a non-likelihood testing method that includes choosing members in view of explicit qualities pertinent to the examination targets. With regards to reviewing quality and acquirement process proficiency in the Branch of Schooling, purposive testing would include purposely choosing people, divisions, or cycles that are basic to understanding and assessing review quality and acquisition effectiveness. This approach permits specialists to zero in on basic components that straightforwardly influence the ideal results.

The study had a sample of 304 students in Opol community college. Moreover, The questionnaire for a survey that was used in the study has two parts. The initial segment of the poll is the segment profile, like sex, age, conjugal status, most elevated instructive fulfillment, and assignment of the respondents. The second piece of the poll was a changed inquiry connected with review quality, explicitly the recurrence of reviews, the extent of the review, review devices and innovation, and idealness of review reports and the obtainment interaction productivity, for example, acquisition time, cost-viability, and consistency with guidelines provider execution (Gerebese, 2022).

III. RESULTS AND DISCUSSION

Profile of the respondents in terms of sex, age, course, and year level.

The demographic analysis of the respondents indicates a majority of female participants, constituting 62.80 percent of the total, as opposed to 37.20 percent males. Regarding age distribution, the highest percentage falls within the 21 to 25 years old category, comprising 47.70 percent, followed by 18 to 20 years old with 35.50 percent. The 26 to 30 years old group accounts for 11.80 percent, and those aged 31 and above represent 4.90 percent. In terms of courses, the majority of respondents are enrolled in BSBA courses, constituting 73.40 percent, while Education and IT courses represent 14.50 percent and 12.20 percent, respectively. Analyzing the distribution based on year levels, the majority of respondents are in the First Year, comprising 32.60 percent, followed by Fourth Year with 26.60 percent, Second Year with 28.30 percent, and Third Year with 12.50 percent. These demographic insights provide a comprehensive understanding of the sample population, aiding in the interpretation of subsequent research findings.

Level of perceived value of chatbot support of the students in terms of frequency of interaction, types of queries, perceived effectiveness, comfort level with chatbots, and reasons for non-usage

The analysis of students' perceived value of chatbot support indicates an overall positive acknowledgment, with an average effectiveness rating of 2.98 and a standard deviation of 0.72. This suggests that students generally find the chatbot support to be beneficial but there might be room for improvement. (Adamopoulou 2020). While interactions with the chatbot are deemed a regular part of study routines (mean of 3.01), suggesting a positive impact, there is room for improvement, particularly in the frequency of academic support usage (mean of 2.91). The chatbot is perceived as highly effective in addressing various types of queries (mean of 3.29), displaying versatility across academic topics (mean of 3.07). This implies that students find the chatbot effective not only in answering specific queries but also in providing support across a diverse range of academic subjects. (Haristiani 2021). However, to maintain and improve this positive perception, continuous monitoring and improvement of the chatbot's capabilities and responses are essential. (Gonda 2019). The overall perceived effectiveness of the chatbot is rated at 3.29, with clarity in explanations contributing significantly (mean of 3.11). This positive perception is crucial for the continued acceptance and usage of the chatbot as a support tool within the educational context. (N. D. Haristiani 2019). The comfort level with chatbots is moderately consistent (mean of 3.01), with notable trust in responses to academic questions (mean of 3.09). This

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confidence is essential for encouraging continued use and establishing the chatbot as a valuable resource in the educational environment. (Hwang 2021), Further, this suggests a moderate level of consistency in students' comfort levels. While there may be some variation in individual experiences, the overall perception indicates a reasonably consistent comfort level with chatbots. (Huang 2021). However, seeking help with coursework indicates a lower comfort level (mean of 2.93), suggesting an area for improvement. Reasons for non-usage are identified as somewhat ineffective (mean of 2.36), with a preference for human assistance being the primary factor (mean of 2.46). This suggests that there are identified issues or concerns that contribute to students not using the chatbot as expected. (Kim 2019). The lowest-rated reason for non-usage is a lack of opportunity to explore the chatbot's offerings (mean of 2.21), highlighting potential for improvement and increased awareness. This implies a moderate level of consistency in students' perceptions. While there may be some variability, the overall trend suggests that many students share a preference for human assistance over the chatbot. (Kumar 2021). These insights provide valuable guidance for institutions and developers to enhance features, address concerns, and promote wider adoption of chatbot support among students

Level of student's self-efficacy in terms of subject self-efficacy, task self-efficacy, study skills self-efficacy, and technology use self-efficacy

The comprehensive analysis of students' self-efficacy across various domains reveals an overall positive belief in their abilities. In terms of subject self-efficacy, students express confidence with an average rating of 3.13, showcasing a belief in their capability to succeed in academic pursuits. The highest-rated item, emphasizing handling challenging tasks successfully, reflects a positive and confident mindset towards academic difficulties. However, an opportunity for improvement is identified in an item related to being confident in excelling in different subjects. Task self-efficacy is rated at 3.06, signifying a general belief in the ability to perform specific tasks successfully. The highest-rated item, showcasing confidence in making effective presentations, highlights a strong belief in presentation skills, though an item related to essay writing is suggested for enhancement (Kim et al., 2019). Study skills self-efficacy is rated at 3.17, indicating a positive belief in applying effective study strategies. The highest-rated item, expressing confidence in taking comprehensive and useful notes during lectures, demonstrates a positive view of this specific study skill. However, an item related to conducting effective research is recommended for improvement. Goal achievement self-efficacy receives a high rating of 3.29, indicating students' belief in setting and attaining academic and personal goals. The highest-rated item, expressing confidence in setting realistic academic goals, underscores a moderate level of consistency in students' perceptions, although an item related to planning and tracking progress is suggested for improvement. Technology use self-efficacy is rated at 3.16, reflecting confidence in using various technological tools. The highest-rated item, demonstrating adaptability to new technology, indicates a moderate level of consistency. However, an item related to troubleshooting technical issues is recommended for improvement. Overall, these findings provide valuable insights into students' self-efficacy perceptions, highlighting specific areas for enhancement and targeted interventions in subjects, tasks, study skills, goal achievement, and technology use (Haristiani & Rifai, 2021).

Level of Perceived Value of Chatbot Support of the students when they are grouped according to profile

Table 1 presents the level of student's self-efficacy in terms of technology use self-efficacy. The data exposed that the level of student's self-efficacy in terms of technology use self-efficacy is 3.16 and the SD of 0.64 or "Effective". This suggests that students generally feel confident in their ability to effectively utilize various technological tools and resources (Alkan, 2019).

Moreover, the highest item on the level of student's self-efficacy in terms of technology use self-efficacy is "I have the skills needed to adapt to new technology tools introduced in my courses." with a mean of 3.31 and SD of 0.66 or "Very Effective". This implies a moderate level of consistency in students' perceptions of their ability to adapt to new technology (Hill, 2018).

Furthermore, the lowest item in the level of student's self-efficacy in terms of technology use self-efficacy is "I feel capable of troubleshooting technical issues that may arise during my studies." with a mean of 2.94 and SD of 0.64 or "Effective". Thus, this item is recommended for further improvement since it does not meet the highest mean standard deviation.

Table 1. The Level of Student's Self-Efficacy in Terms of Technology Use Self-Efficacy

Items	Mean	SD	Description	Interpretation
I am confident in my ability to use technology for academic research.	3.30	0.65	Strongly Agree	Very Effective
I believe I can effectively utilize software applications for coursework.	3.13	0.65	Agree	Effective
I am sure I can navigate and use online learning platforms proficiently.	3.11	0.59	Agree	Effective
I feel capable of troubleshooting technical issues that may arise during my studies.	2.94	0.64	Agree	Effective
I have the skills needed to adapt to new technology tools introduced in my courses.	3.31	0.66	Strongly Agree	Very Effective
Average	3.16	0.64	Agree	Effective
Legend: 1.00-1.75 (Very Ineffective), 1.76-2.50 (Ineffective), 2.51-3.25 (Effective), 3.26-4.00 (Very Effective)				

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Chatbot Support influence the Self-Efficacy of the students

The Linear Regression Analysis conducted on the relationship between the use of chatbot support and student self-efficacy yields noteworthy insights. The positive beta coefficient ($\beta = 0.070$) suggests that an increase in the use of chatbot support is associated with a positive change in student self-efficacy. The high t-value of 15.752 and the low p-value of 0.000 indicate the statistical significance of this relationship, strengthening the credibility of the findings. However, the overall model's explanatory power, as indicated by the adjusted R^2 of 0.002, is relatively low, suggesting that factors beyond chatbot support may contribute to student self-efficacy. The constant (2.688) provides the estimated value of student self-efficacy when chatbot support usage is zero, though its practical interpretation may be limited.

Therefore, a comprehensive approach to enhancing self-efficacy may involve considering various educational interventions and exploring other influencing factors. Further research can contribute to a deeper understanding of the complex dynamics between technological support and student self-efficacy (Kumar et al., 2021).

Table 2 Linear Regression Analysis of Use of Chatbot Support in their Self-Efficacy of the Students

Independent Variables	Beta	T-value	Sig.
Use of Chatbot Support	.070	15.752	.000
Dependent Variable	Student Self-Efficacy		
Constant	2.688		
Adjusted R ²	.002		
F-value	1.508		
Significance	.220		
Model: <i>Student Self-Efficacy = 2.688 + .070 Use of Chatbot Support</i>			

CONCLUSIONS

Based on the findings of the study, the conclusions are drawn:

In conclusion, the demographic analysis provides a comprehensive overview of the respondent population, revealing a majority of female participants, predominant age groups, diverse courses, and distribution across different academic years. These demographic insights serve as a crucial context for interpreting subsequent research findings. Moving on to the analysis of students' perceived value of chatbot support, the overall positive acknowledgment suggests a generally effective impact, with notable strengths in regularity of interaction, versatility in addressing queries, and clarity in explanations. However, there is room for improvement in the frequency of academic support usage and seeking help with coursework. Reasons for non-usage highlight a preference for human assistance, indicating a need for strategies to address this inclination. The examination of students' self-efficacy across various domains underscores their positive belief in their capabilities, with notable strengths in subject self-efficacy, task self-efficacy, study skills self-efficacy, goal achievement self-efficacy, and technology use self-efficacy (Huang et al., 2021). Identified areas for improvement include confidence in excelling in different subjects, writing high-quality essays, conducting effective research, planning and tracking progress for goal achievement, and troubleshooting technical issues related to technology use. Overall, these findings provide actionable insights for institutions and developers to enhance chatbot features, address concerns, and promote self-efficacy among students in specific domains, ultimately contributing to a more effective and supportive educational environment (Hwang et al., 2021).

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