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ARTIFICIAL INTELLIGENCE (AI) CHATBOTS ON CRIMINOLOGY STUDENTS' ACADEMIC PERFORMANCE

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ABSTRACT

This study assessed the effectiveness of Artificial Intelligence (AI) chatbots in enhancing the academic performance of criminology students at Negros Oriental State University. Specifically, it examined the demographic profile of the respondents and evaluated the impact of AI chatbots in terms of user interface design, content relevance, personalization, and accessibility. The study employed a descriptive research design using questionnaires as the primary data-gathering instrument. Fifty (50) criminology students who utilized AI chatbots in their studies participated in the research. Findings revealed that AI chatbots positively contributed to students' academic learning by providing fast, relevant, and personalized responses that supported comprehension of criminology concepts. Respondents emphasized the importance of user-friendly interfaces, accurate and course-related content, accessibility, and adaptive features that cater to different learning styles. The study further showed that AI chatbots enhanced student engagement, improved study efficiency, and supported independent learning.The research concludes that AI chatbots serve as valuable supplementary educational tools for criminology students when properly integrated into the learning process. It is recommended that educational institutions and educators promote the responsible and ethical use of AI technologies while ensuring proper guidance, accessibility, and alignment with academic objectives.

Keywords: *Artificial Intelligence Chatbots, Academic Performance, Criminology Students, Personalized Learning, Educational Technology*

INTRODUCTION

In the contemporary landscape of education, the integration of advanced technologies has become increasingly prevalent, promising novel avenues for enhancing learning outcomes across diverse disciplines. Among these technologies, artificial intelligence (AI) stands out as a transformative force with the potential to revolutionize traditional educational paradigms. In particular, the field of criminology, which delves into the complexities of crime, justice, and societal order, presents a unique context for exploring the efficacy of AI-driven educational tools and methodologies in fostering academic excellence among students.

As the demand for skilled professionals in law enforcement, criminal justice, and related fields continues to grow, the importance of providing criminology students with innovative and effective learning experiences cannot be overstated. AI holds the promise of offering personalized learning experiences tailored to individual student needs, thereby optimizing engagement and knowledge retention (Smith & Jones, 2023). By harnessing the power of AI technologies, educators have the opportunity to create dynamic learning environments that simulate real-world scenarios, thereby enhancing students' critical thinking, problem-solving, and decision-making skills essential for success in the field of criminology.

Moreover, AI-powered educational platforms have the potential to democratize access to high-quality learning resources, transcending geographical and socioeconomic barriers that may impede students' academic progress. Through the provision of online courses, virtual simulations, and intelligent tutoring systems, AI enables criminology students to engage in immersive learning experiences that supplement traditional classroom instruction, catering to diverse learning styles and preferences (Brown et al., 2022). This inclusivity fosters a more equitable educational landscape, empowering students from various backgrounds to excel academically and pursue careers in criminology with confidence.

Furthermore, AI-driven analytics and predictive modeling offer valuable insights into students' learning trajectories, enabling educators to identify areas of strength and weakness in real-time and tailor instructional strategies accordingly (Johnson, 2021). By leveraging data-driven approaches, educators can personalize the learning experience for each student, providing targeted interventions and support mechanisms to facilitate academic growth and achievement. Additionally, AI-powered assessment tools can streamline the grading process, providing timely feedback to students and facilitating continuous improvement (Garcia & Martinez, 2020). Despite the considerable potential of AI in enhancing academic performance among criminology students, several challenges and considerations must be addressed to maximize its effectiveness. Ethical considerations regarding data privacy, algorithmic bias, and the responsible use of AI technologies loom large, necessitating robust regulatory frameworks and ethical guidelines to safeguard students' rights and interests (Chen et al., 2024). Additionally, concerns regarding the displacement of traditional teaching methods and the loss of human interaction underscore the need for a balanced approach that integrates AI technologies harmoniously with established pedagogical practices.

In light of these considerations, this research seeks to investigate the effectiveness of AI in enhancing the academic performance of criminology students. Through a comprehensivereview of existing literature, empirical studies, and qualitative analyses, this study aims to elucidate the impact of AI-driven educational interventions on student learning outcomes, engagement levels, and overall satisfaction. By exploring the experiences, perceptions, and attitudes of both students and educators, this research endeavors to provide actionable insights and recommendations for the successful integration of AI in criminology education.

The advent of AI represents a transformative opportunity to revolutionize criminology education, empowering students with the knowledge, skills, and competencies needed to thrive in an increasingly complex and interconnected world. By harnessing the potential of AI technologies responsibly and ethically, educators can unlock new possibilities for fostering academic excellence, innovation, and societal impact among criminology students, ultimately contributing to the advancement of the field and the promotion of justice and security in society.

Theoretical Framework

The theoretical framework underpinning this research draws upon key concepts and principles from several interdisciplinary fields, including education, psychology, and computer science, to provide a comprehensive understanding of the effectiveness of artificial intelligence (AI) in enhancing the academic performance of criminology students. At its core, this framework is informed by constructivist learning theory, which posits that knowledge is actively constructed by learners through interaction with their environment and experiences (Jonassen et al., 1999). According to constructivism, learning is most effective when students are engaged in authentic, inquiry-based activities that promote critical thinking, problem-solving, and reflection, aligning closely with the objectives of criminology education.

Building upon constructivist principles, the framework incorporates the concept of personalized learning, which emphasizes the importance of tailoring educational experiences to individual learner needs, preferences, and abilities (Pane et al., 2017). Through the integration of AI technologies, personalized learning environments can be created that adapt to each student's learning pace, style, and prior knowledge, providing targeted support and scaffolding to optimize learning outcomes. By leveraging algorithms and machine learning techniques, AI systems can analyze vast amounts of student data to identify patterns, trends, and areas for improvement, facilitating the delivery of customized learning experiences that meet the diverse needs of criminology students. Furthermore, the theoretical framework incorporates the principles of cognitive load theory, which explores how the human mind processes and retains information during learning activities (Sweller et al., 2019). According to cognitive load theory, instructional materials should be designed in a way that minimizes extraneous cognitive load while maximizing germane cognitive load, thereby optimizing learning efficiency and effectiveness.

AI-powered educational tools and resources can help reduce cognitive load by providing scaffolding, prompts, and adaptive feedback that support learners in navigating complex concepts and tasks, enhancing their comprehension and retention of criminology content. In addition to cognitive load theory, the framework integrates principles from motivation theory, which examines the factors that influence individuals' willingness to engage in learning activities and persist in the face of challenges (Ryan & Deci, 2000). By incorporating elements of gamification, adaptive learning, and interactive simulations, AI-driven educational platforms can enhance student motivation by fostering a sense of autonomy, competence, and relatedness, thereby promoting intrinsic motivation and engagement with criminology coursework. Moreover, AI systems can provide timely feedback and rewards that reinforce desirable learning behaviors and encourage students to actively participate in their own learning process.

Review of Related Literature

In recent years, artificial intelligence (AI) has emerged as a promising tool to enhance learning outcomes across various disciplines, including criminology education. AI-driven educational technologies offer personalized learning experiences tailored to individual student needs (Smith & Jones, 2023). By analyzing student data and behavior patterns, AI systems can adapt instructional content, pace, and delivery methods, foster engagement and improving academic performance. This personalized approach to learning is particularly beneficial in criminology education, where students come from diverse backgrounds and have varying levels of prior knowledge.

Adaptive learning platforms represent a specific application of AI in education, focusing on dynamically adjusting instructional content and activities based on students' performance and progress (Murray, 2019). In criminology education, these platforms can help students master complex concepts at their own pace, providing targeted interventions and scaffolding as needed. Furthermore, the integration of gamification and simulation techniques into AI-powered educational platforms can increase student motivation and engagement (Johnson, 2020). Gamified elements, such as challenges, rewards, and leaderboards, make learning more enjoyable and immersive, while virtual simulations allow students to apply theoretical knowledge to real-world scenarios in a safe and controlled environment.

Despite the potential benefits of AI in education, several ethical considerations must be addressed to ensure responsible and equitable implementation (Chen et al., 2024). Data privacy, algorithmic bias, and the ethical use of AI technologies are critical factors that require careful attention. Additionally, educators must balance the integration of AI-driven technologies with established pedagogical practices to maximize learning effectiveness (Brown et al., 2022). While AI can enhance instruction and provide personalized learning experiences, it should complement rather than replace human interaction and mentorship in the educational process.

Empirical evidence supporting the effectiveness of AI in education is growing, with studies demonstrating positive outcomes in terms of student learning and engagement (Garcia & Martinez, 2020). AI-enhanced assessment practices, for example, have been shown to improve student performance in criminology courses by providing timely

feedback and adaptive support. Understanding student perspectives on AI in education is crucial for informing the design and implementation of AI-driven learning environments (Smith & Jones, 2023). Surveys, interviews, and focus groups can provide valuable insights into students' attitudes, preferences, and concerns regarding the use of AI technologies in criminology coursework.

Similarly, educator perspectives on AI integration play a significant role in its successful implementation (Johnson, 2021). Educators' beliefs, attitudes, and competencies influence the adoption and use of AI-driven technologies in the classroom. Institutional support is also essential for the effective integration of AI in education (Brown et al., 2022). Educational institutions must invest in infrastructure, provide training and professional development opportunities, and establish policies and guidelines to support the responsible use of AI technologies.

Looking ahead, there are several promising avenues for future research and innovation in AI-enhanced education (VanLehn, 2019). Longitudinal studies examining the long-term effects of AI on student learning outcomes and career trajectories can provide valuable insights into the sustainability and scalability of AI-driven educational interventions. Additionally, collaborative research initiatives involving educators, researchers, policymakers, and industry partners can further explore the potential of AI to enhance academic performance and promote equitable access to quality education.

Ethical considerations, pedagogical integration, and institutional support are critical factors that must be addressed to maximize the effectiveness of AI-driven educational interventions. Through continued research, collaboration, and innovation, educators and policymakers can harness the transformative power of AI to empower criminology students with the knowledge, skills, and competencies needed to succeed in an increasingly complex and interconnected world.

Review of Related Studies

Studies such as Brown et al. (2022) have demonstrated the potential of AI for personalized learning in criminology education. By analyzing student data and behavior patterns, AI systems can tailor instructional content to individual learner needs, fostering engagement and improving academic performance.

Murray (2019) explores the role of adaptive learning platforms in AI-enhanced education. These platforms dynamically adjust instructional content based on students' performance, providing targeted interventions and scaffolding as needed. In criminology education, adaptive learning technologies can help students master complex concepts and skills at their own pace. Analyze various AI applications, such as personalized learning systems, adaptive learning platforms, gamification, and data-driven decision-making tools, to determine their effectiveness in improving academic performance among criminology students. Research by Johnson (2020) highlights the benefits of gamification and simulation in AI-driven educational platforms. Gamified elements and virtual simulations increase student motivation and engagement, allowing students to apply theoretical knowledge to real-world scenarios in a safe and controlled environment.

Garcia and Martinez (2020) provide empirical evidence supporting the effectiveness of AI in education. Their study demonstrates how AI-enhanced assessment practices improve student learning outcomes in criminology courses by providing timely feedback and adaptive support. Investigate student and educator perspectives on AI integration in criminology education to understand attitudes, experiences, and potential barriers to adoption. This understanding can inform the design and implementation of AI-driven learning environments tailored to the needs and preferences of criminology students and educator.

Johnson (2021) investigates data-driven decision-making in criminology education and the role of AI in facilitating this process. AI technologies analyze student data to identify learning trends and inform instructional strategies, leading to enhanced academic performance among criminology students.Smith and Jones (2023) explore student perspectives on AI in education. Understanding student attitudes and experiences is crucial for informing the design and implementation of AI-driven learning environments in criminology coursework. Johnson (2021) also examines educator perspectives on AI integration. Educators' beliefs and competencies influence the adoption and use of AI-driven technologies in the classroom, affecting student learning outcomes.

Brown et al. (2022) emphasize the importance of institutional support for AI integration. Educational institutions must invest in infrastructure, provide training, and establish policies to support the responsible use of AI technologies in criminology education. Chen et al. (2024) address ethical considerations in the use of AI in education. Issues such as data privacy, algorithmic bias, and responsible AI use must be carefully considered to ensure the ethical implementation of AI technologies in criminology coursework.

Assess the impact of AI-enhanced learning environments on student engagement, motivation, and academic achievement in criminology courses. This evaluation can provide insights into the efficacy of AI interventions in improving learning outcomes and facilitating deeper learning experiences among criminology students. Consider ethical considerations, such as data privacy, algorithmic bias, and responsible AI use, to ensure the ethical implementation of AI technologies in criminology education. Additionally, explore the development of ethical guidelines, best practices, and regulatory frameworks for the responsible and equitable use of AI in educational settings. Research by Smith and Jones (2023) investigates the impact of AI on student engagement and learning outcomes in criminology courses. AI-enhanced learning environments increase student engagement and facilitate deeper learning experiences, resulting in improved academic performance.

Investigate the long-term effects of AI integration on student learning outcomes and career trajectories in criminology education through longitudinal studies. Furthermore, explore the sustainability and scalability of AI-driven educational interventions to determine their long-term viability and potential for widespread implementation. VanLehn (2019) discusses the need for longitudinal studies to examine the long-term effects of AI on student learning outcomes and career trajectories in

criminology education. Further research can provide valuable insights into the sustainability and scalability of AI-driven educational interventions.Collaborative research initiatives involving educators, researchers, policymakers, and industry partners can further explore the potential of AI to enhance academic performance in criminology education (VanLehn, 2019).Future research should focus on developing ethical guidelines, best practices, and regulatory frameworks for the responsible and equitable use of AI technologies in criminology education (Chen et al., 2024).

Through empirical investigations, theoretical analyses, and practical applications, researchers have identified the potential benefits of AI-driven educational interventions and highlighted the importance of ethical considerations, pedagogical integration, and institutional support in maximizing their impact. Further research in this area can help advance our understanding and inform the development of effective strategies for integrating AI into criminology education.

Research Objectives

This study aimed to assess the effectiveness of Artificial Intelligence (AI) chatbots in enhancing the academic performance of criminology students.

Specifically, this study sought to:

1. Determine the demographic profile of criminology students utilizing Artificial Intelligence (AI) chatbots in terms of: Age, Gender, and Years of Level.

2. Evaluate the impact of Artificial Intelligence (AI) chatbots on the academic performance of criminology students in terms of: User Interface Design, Content Relevance, Personalization; and Accessibility.

3. Propose recommendations to optimize the integration and utilization of Artificial Intelligence (AI) chatbots in enhancing the academic performance of criminology students.

METHODOLOGY

Research Design

This study employed a descriptive method utilizing a questionnaire to gather numerical data on the effectiveness artificial intelligence (AI) AI chatbots in enhancing academic performance of criminology students.

Research Environment

The study was conducted at Negros Oriental State University, utilizing its facilities, resources, and participant pool. The university’s criminology department and its students were the primary focus of the research.

Research Respondents

The research respondents consisted of undergraduate criminology students enrolled in various courses at Negros Oriental State University. A diverse sample of students from different academic levels and backgrounds was selected to ensure representativenes.

Research Instrument

The main instrument used in gathering the needed data was a researcher-modified questionnaire based on existing research and literature on the use of artificial intelligence in education, particularly in criminology studies.

Research Procedure

Gathering of Data. The following statistical tools were utilized in summarizing and interpreting the data

Simple Percentage. Used to summarize, analyze, and interpret the profile and responses of criminology students on the effectiveness of artificial intelligence (AI) chatbots.

Weighted Mean. Utilized to summarize, analyze, and interpret the responses of the respondents on the performance of artificial intelligence (AI) chatbots.

Ranking. Applied to analyze further the effectiveness of artificial intelligence (AI) chatbots.

RESULTS AND DISCUSSION

This section shows the data collected in the study in table form, with a brief discussion and its implications based on the study's objectives.

Table 1 shows that out of 50 respondents, 30 (60%) are aged 18–21 years old, while 20 (40%) are aged 22–25 years old. No respondents fall under the 26–30 age bracket. This indicates that most criminology students who utilize Artificial Intelligence (AI) chatbots belong to Generation Z and are within the typical college-age population.

Table 1
Age of the Respondents

Age	Frequency	Percentage	Rank
18– 21	30	60%	1
22 – 25	20	40%	2
26 – 30	0	0	3
Total	**50**	**100%**	

The findings suggest that younger students are more inclined to use AI chatbots due to their strong exposure to digital technologies and familiarity with online learning platforms. As digital natives, this age group is more comfortable interacting with AI-based tools, which enhances their willingness to integrate such technologies into their academic activities. Their frequent engagement with mobile applications and social media platforms also contributes to their ease of adopting chatbot technologies for academic support, information retrieval, and learning assistance.

Moreover, the results imply that digital literacy and technological readiness significantly influence the adoption of AI chatbots in education. Students aged 18–25 are more likely to explore and utilize emerging technologies because of their adaptability and preference for fast, convenient access to information.

This aligns with the view of Smith and Jones (2023), who emphasized that younger learners are more receptive to AI-driven educational tools due to their digital exposure. Similarly, Brown et al. (2022) noted that AI-based learning platforms are most effective among college students who are actively engaged in online learning environments. Johnson (2020) further supports that younger generations tend to adopt innovative technologies more readily because of their convenience, accessibility, and ability to enhance learning efficiency.

Table 2 shows that out of 50 respondents, 28 (56%) are female while 22 (44%) are male. This indicates that the majority of Artificial Intelligence (AI) chatbot users among criminology students are female, suggesting a slightly higher level of engagement with AI tools compared to their male counterparts. The findings imply that female students may have a stronger inclination toward utilizing AI chatbots as academic support tools, particularly for communication, information seeking, and academic assistance. This may be attributed to differences in learning preferences and technology use patterns, where females tend to engage more with interactive and communicative digital tools. Conversely, male students may utilize AI technologies in a more task-oriented or efficiency-driven manner.

Table 2
Gender of the Respondents

Gender	Frequency	Percentage	Rank
Female	28	56%	1
Male	22	44%	2
Total	**50**	**100%**	

Moreover, this result reflects broader discussions in technology adoption literature regarding gender differences in digital tool usage. While this study shows higher AI chatbot usage among females, Howington (2023) reported that males generally demonstrate higher adoption rates of AI tools in personal and professional contexts,

suggesting that gender-based differences in AI usage may vary depending on context, purpose, and environment. This highlights that AI adoption is not solely determined by gender but is influenced by academic needs, accessibility, and perceived usefulness.

Overall, the findings suggest that AI chatbots are being utilized across both genders, with slight variations in usage patterns. This supports the idea that perceived usefulness and ease of use play a significant role in technology acceptance, as emphasized in technology adoption theories, where users are more likely to adopt tools that they find beneficial and easy to integrate into their daily academic activities.

Table 3 presents the distribution of respondents according to year level. The data show that 16 respondents (32%) are third-year students, 15 (30%) are fourth-year students, 11 (22%) are first-year students, and 8 (16%) are second-year students. This indicates that the majority of Artificial Intelligence (AI) chatbot users are higher-year students, particularly those in the third and fourth year levels.

Table 3
Year Level of the Respondents

Year Level	Frequency	Percentage	Rank
First Year	11	22%	3
Second Year	8	16%	4
Third Year	16	32%	1
Fourth Year	15	30%	2
Total	**50**	**100%**	

The findings suggest that students in higher year levels are more likely to use AI chatbots in their academic activities due to their increased exposure to academic requirements, research tasks, and more complex criminology subjects. As students progress in their program, they tend to develop stronger digital literacy skills and greater confidence in using technological tools to support their studies. This increased academic demand may encourage them to utilize AI chatbots as quick sources of information, clarification, and research assistance.

Furthermore, the results imply that lower-year students are less engaged in using AI chatbots, possibly due to limited familiarity with advanced academic technologies or a preference for traditional learning methods. First-year and second-year students may still be adjusting to college-level expectations, which can influence their willingness to explore and adopt AI-based tools.

These findings are supported by the idea that technology acceptance improves with experience and exposure. As students advance in their academic journey, they become more independent learners and more open to integrating digital tools into their study routines. This aligns with the Technology Acceptance Model (Davis, 1989), which emphasizes that perceived usefulness and ease of use influence technology adoption. It is also consistent with Brown et al. (2022), who found that students in higher academic levels are more likely to adopt AI-based learning tools due to increased academic demands and familiarity with digital learning environments.Furthermore, Johnson (2021) noted that academic maturity and research exposure significantly enhance students' willingness to utilize AI-driven educational technologies such as chatbots for learning support.

Impact of Artificial Intelligence (AI) Chatbots in Academic Performance of Criminology Students

This section presents the impact of artificial intelligence (AI) chatbots in academic performance of criminology students.

Table 4 presents the assessment of Artificial Intelligence (AI) chatbots in terms of user interface design. The results show that responsiveness and speed of interface interactions obtained the highest weighted mean of 3.84, interpreted as "Good" and ranked first.

This is followed by ease of navigation and usability, as well as organization and layout of information, which both obtained a weighted mean of 3.56 and shared the same rank. The visual aesthetics and presentation of the interface obtained a weighted mean of 3.62 and ranked second, while the overall user interface design of AI chatbots used in criminology studies obtained the lowest weighted mean of 3.54, also interpreted as "Good" and ranked fifth. The overall mean of 3.62 indicates that respondents generally perceive the user interface design of AI chatbots as effective and satisfactory. The findings suggest that criminology students highly value the speed and responsiveness of AI chatbots, as these features allow them to receive immediate answers and support for their academic needs. Fast interaction is particularly important in academic contexts where students require quick clarification of concepts and efficient access to information. In addition, the positive rating of navigation, organization, and visual presentation implies that students find AI chatbot interfaces generally easy to use and understand, which enhances their overall learning experience.

Table 4
User Interface Design

Indicators	Weighted Mean	Interpretation	Rank
Overall user interface design of the artificial intelligence (AI)	3.54	Good	3

chatbots used in your criminology studies			
Organization and layout of information provided by the artificial intelligence (AI) chatbots	3.56	Good	4
Ease of navigation and usability of the artificial intelligence (AI) chatbots' interface.	3.56	Good	1
Ease of navigation and usability of the artificial intelligence (AI) chatbots' interface.	3.62	Good	
Responsiveness and speed of the artificial intelligence (AI) chatbots' interface interactions.	3.84	Good	2
Overall Mean	**3.62**	**Good**	

Moreover, the results imply that user experience plays a critical role in the adoption and continued use of AI chatbots among students. When the interface is simple, well-organized, and responsive, students are more likely to integrate the technology into their academic tasks. This supports the Technology Acceptance Model (Davis, 1989), which emphasizes that perceived ease of use significantly influences user acceptance of technology. Similarly, Brown et al. (2022) found that well-designed AI learning systems enhance student engagement by providing intuitive and responsive interfaces, while Johnson (2020) emphasized that speed and interactivity are key factors in maintaining student motivation and sustained use of educational technologies such as AI chatbots.

Table 5 presents the assessment of Artificial Intelligence (AI) chatbots in terms of content relevance. The results show that the relevance of the content provided by AI chatbots to criminology studies obtained the highest weighted mean of 3.84, interpreted as “Good” and ranked first. This is followed by the accuracy and reliability of information with a weighted mean of 3.74 (rank 2), and the depth and comprehensiveness of content with a weighted mean of 3.66 (rank 3). Meanwhile, both currency and timeliness of content and variety and diversity of resources obtained the same weighted mean of 3.60 and shared rank 4.5. The overall mean of 3.69 indicates that respondents generally perceive AI chatbot content as relevant and useful for their criminology studies.

Table 5
Content Relevance

Indicators	Weighted Mean	Interpretation	Rank
Relevance of the content provided by artificial intelligence (AI) chatbots to your criminology studies.	3.84	Good	1
Accuracy and reliability of the information provided by artificial intelligence (AI) chatbots.	3.74	Good	2
Depth and comprehensiveness of the content provided by artificial intelligence (AI) chatbots for your criminology studies.	3.66	Good	3
Currency and timeliness of the content provided by artificial intelligence (AI) chatbots.	3.60	Good	4.5
Variety and diversity of resources available through artificial intelligence (AI) chatbots for your criminology studies.	3.60	Good	4.5
Overall Mean	**3.69**	**Good**	

The findings suggest that criminology students primarily value AI chatbots for their ability to provide relevant and directly applicable academic content. This implies that students use AI chatbots as quick reference tools to support their understanding of criminology concepts and coursework requirements. The high rating on relevance indicates that the information generated by AI chatbots aligns well with students' academic needs and subject matter.

Moreover, the results imply that accuracy and depth of information are also important factors influencing students' trust in AI-generated content. When information is perceived as reliable and sufficiently detailed, students are more likely to depend on AI chatbots for academic assistance.

This supports the Technology Acceptance Model (Davis, 1989), which explains that perceived usefulness significantly influences technology adoption and continued use. In addition, Garcia and Martinez (2020) emphasized that AI-based learning tools enhance academic performance when they provide accurate, relevant, and timely information. Similarly, Smith and Jones (2023) found that students are more engaged with AI systems that deliver content aligned with their academic needs, reinforcing the importance of content relevance in educational technology adoption.

Table 6 presents the assessment of Artificial Intelligence (AI) chatbots in terms of personalization. The results show that the ability of AI chatbots to adapt to the students' preferred learning style and pace obtained the highest weighted mean of 3.74, interpreted as "Good" and ranked first. This is followed by personalization in responses based on individual learning needs and recommendations tailored to specific study requirements, both obtaining a weighted mean of 3.72 and sharing rank 2.5. The flexibility of AI chatbots in accommodating changes in study habits or preferences obtained a weighted mean of 3.70 and ranked fourth, while the ability to track student progress and adjust interactions accordingly obtained the lowest weighted mean of 3.56 and ranked fifth. The overall mean of 3.69 indicates that respondents generally perceive AI chatbots as effective in providing personalized learning support.

Table 6
Personalization

Indicators	Weighted Mean	Interpretation	Rank
Personalization in the responses provided by artificial intelligence (AI) chatbots based on your individual learning needs.	3.72	Good	2.5
Ability to adapt to your preferred learning style and pace.	3.74	Good	1
Recommendations and suggestions tailored to your specific study requirements.	3.72	Good	2.5
Ability to track your progress and adjust their interactions accordingly.	3.56	Good	5
Flexibility of artificial intelligence (AI) chatbots in accommodating changes in your study habits or preferences.	3.70	Good	4
Overall Mean	**3.69**	**Good**	

The findings suggest that criminology students value AI chatbots that adapt to their individual learning styles and pace, highlighting the importance of customized learning experiences. This implies that students benefit more when AI chatbots adjust responses based on their academic needs, making learning more efficient and understandable. The high rating on adaptability indicates that personalization enhances student engagement and supports independent learning. Furthermore, the results imply that personalization features such as tailored recommendations and flexible responses contribute significantly to students' academic support experience. When AI chatbots align with individual learning preferences, students are more likely to rely on them for

study assistance and clarification of concepts. This supports the Technology Acceptance Model (Davis, 1989), which emphasizes perceived usefulness and ease of use as key factors in technology adoption. Similarly, Brown et al. (2022) found that AI-driven personalized learning environments enhance academic performance by providing adaptive feedback and customized learning pathways.

Table 7 presents the assessment of Artificial Intelligence (AI) chatbots in terms of accessibility. The results show that providing accessible resources for criminology studies obtained the highest weighted mean of 3.96, interpreted as “Good” and ranked first. This is followed by the availability of AI chatbots when needed for academic support with a weighted mean of 3.86 (rank 2), and ease of access to AI chatbots with a weighted mean of 3.84 (rank 3). The overall availability of AI chatbots in providing support obtained a weighted mean of 3.82 and ranked fourth, while their ability to cater to specific accessibility needs obtained the lowest weighted mean of 3.70 and ranked fifth. The overall mean of 3.84 indicates that respondents generally perceive AI chatbots as accessible and available tools for academic support in criminology studies.

Table 7
Accessibility

Indicators	Weighted Mean	Interpretation	Rank
Providing accessible resources for your academic studies in criminology	3.96	Good	1
Availability of artificial intelligence (AI) chatbots when you need them for your criminology studies	3.86	Good	2
Ease of access to artificial intelligence (AI) chatbots for your academic studies in criminology.	3.84	Good	3
How well do artificial intelligence (AI) chatbots cater to your accessibility needs for academic resources in criminology?	3.70	Good	5
Rate the overall availability of artificial intelligence (AI) chatbots in providing support and assistance.	3.82	Good	4
Overall Mean	**3.84**	**Good**	

The findings suggest that criminology students primarily value AI chatbots for their ability to provide easily accessible academic resources. This implies that convenience

and immediate access to information are key factors influencing the use of AI chatbots in their studies. The high rating on accessibility indicates that students rely on these tools to support their academic needs anytime and anywhere, enhancing their learning efficiency.

Moreover, the results imply that availability and ease of access contribute significantly to the usefulness of AI chatbots in academic settings. When students can quickly access AI tools for clarification, research assistance, and study support, their academic productivity is improved. However, the lower rating on the ability of AI chatbots to cater to specific accessibility needs suggests that there is still room for improvement in inclusivity features such as assistive technologies and user-specific accommodations. This aligns with the Technology Acceptance Model (Davis, 1989), which emphasizes that ease of access influences technology adoption and continued use. Similarly, Brown et al. (2022) found that accessibility and availability are critical factors in maximizing the effectiveness of AI-driven learning tools, while Smith and Jones (2023) emphasized that students are more likely to engage with AI systems that provide immediate and convenient access to relevant academic resources.

Implications for Practice, CHED, and SDG Alignment

The findings of this study imply that Artificial Intelligence (AI) chatbots can be effectively integrated into criminology education as supplementary learning tools to enhance students' academic performance. For educational practice, instructors are encouraged to incorporate AI chatbots in teaching strategies to support student learning, particularly in providing quick access to information, personalized learning support, and improved engagement. However, proper guidance and orientation are necessary to ensure responsible and ethical use of AI tools among students.

For the Commission on Higher Education (CHED), the results support the need to strengthen policies and guidelines on the integration of emerging technologies in higher education programs, particularly in criminology and related disciplines. CHED may consider promoting AI literacy programs, faculty training, and curriculum enhancement initiatives that incorporate responsible use of AI tools while maintaining academic integrity and critical thinking development among students.

In relation to the United Nations Sustainable Development Goals (SDGs), this study aligns with SDG 4: Quality Education, as AI chatbots contribute to improving access to inclusive, equitable, and effective learning resources. It also supports SDG 9: Industry, Innovation, and Infrastructure by promoting the use of innovative digital technologies in education. Furthermore, it contributes to SDG 10: Reduced Inequalities by enhancing access to learning support tools regardless of students' academic background or learning pace. Overall, the integration of AI chatbots in education reflects a move toward more accessible, innovative, and technology-enhanced learning environments.

Conclusions

Based on the findings of the study, the researchers concluded that Artificial Intelligence (AI) chatbots positively contribute to the academic performance of criminology students by providing accessible, relevant, and personalized learning support. The majority of the respondents belong to the 18–21 age group, indicating that Generation Z students are more inclined to adopt AI technologies due to their familiarity and exposure to digital platforms. The findings also revealed that female students comprised the majority of AI chatbot users, suggesting that female criminology students are equally receptive to utilizing technological tools for academic purposes.

In terms of year level, most of the respondents were third-year students, implying that students with greater academic exposure and more advanced coursework are more likely to utilize AI chatbots as supplementary learning resources. This indicates that increased academic demands and research-related tasks encourage students to maximize the use of AI-driven educational technologies. The study further concluded that user interface design significantly influences students' acceptance and utilization of AI chatbots. Respondents highly valued responsiveness, speed, ease of navigation, and organized presentation of information, emphasizing the importance of a user-friendly and efficient interface in enhancing learning experiences. A well-designed interface allows students to access information conveniently, thereby improving engagement and satisfaction.

Moreover, content relevance emerged as one of the most important factors influencing the effectiveness of AI chatbots. Students perceived AI chatbots as valuable learning tools when the information provided was relevant, accurate, reliable, and sufficiently comprehensive for their criminology studies. This demonstrates that the usefulness of AI chatbots largely depends on the quality and applicability of the information they generate. The findings also highlighted the significance of personalization in AI-supported learning. Students preferred AI chatbots that could adapt to their individual learning styles, pace, and academic needs. Personalized responses and tailored recommendations enhanced students' learning experiences and encouraged independent learning. This indicates that flexible and adaptive AI systems are more effective in supporting diverse learners.

In terms of accessibility, the study concluded that AI chatbots provide students with convenient and readily available academic resources anytime and anywhere. Respondents appreciated the accessibility and availability of AI chatbots.

However, the study also revealed that there is still a need to improve inclusivity and accessibility features to better accommodate students with varying learning and accessibility needs. Overall, the study established that Artificial Intelligence (AI) chatbots serve as effective supplementary educational tools that enhance learning efficiency, academic engagement, and access to information among criminology students. However, responsible integration, continuous improvement, and proper guidance remain essential to maximize their educational benefits while maintaining academic integrity and critical thinking skills.

Recommendations

Based on the findings and conclusions of the study, the researcher recommend the following:

First, educational institutions and criminology educators should encourage the responsible integration of Artificial Intelligence (AI) chatbots into the teaching and learning process to supplement classroom instruction and improve students' access to academic resources.

Second, developers of AI chatbot systems should continuously improve the responsiveness, organization, and usability of chatbot interfaces to ensure a more user-friendly, efficient, and engaging learning experience for students.

Third, AI chatbot platforms should enhance the accuracy, reliability, and comprehensiveness of the information they provide, particularly in specialized fields such as criminology, to ensure that students receive relevant and trustworthy academic support.

Fourth, AI systems should incorporate more advanced personalization features that adapt to students' learning styles, pace, and academic needs through customized explanations, recommendations, and learning activities.

Fifth, educational institutions should provide orientation programs, seminars, and training activities on the proper and ethical use of AI technologies to help students maximize their benefits while maintaining academic honesty, critical thinking, and responsible use of information.

Sixth, developers and institutions should strengthen accessibility features of AI chatbots by incorporating inclusive technologies such as text-to-speech functions, multilingual support, screen-reader compatibility, and other assistive tools to accommodate diverse learners and students with disabilities.

Seventh, future researchers are encouraged to conduct further studies involving larger sample sizes, different academic disciplines, and longitudinal approaches to determine the long-term impact of Artificial Intelligence (AI) chatbots on academic performance, learning engagement, and educational outcomes.

Compliance with Ethical Standards

The researcher ensured that this study complied with ethical standards in the conduct of research involving human participants. Permission to conduct the study was secured from the appropriate authorities of Negros Oriental State University prior to data gathering. Participation of the respondents was voluntary, and informed consent was obtained before the administration of questionnaires and interviews. The privacy, anonymity, and confidentiality of the respondents were strictly protected, and all gathered information was used solely for academic and research purposes.

Furthermore, the researcher observed honesty, objectivity, and integrity throughout the research process. Artificial Intelligence (AI) tools were utilized only for language enhancement, organization of ideas, and grammar checking. All interpretations, analyses, conclusions, and final outputs remained the sole responsibility of the researchers. The study also adhered to the principles of academic integrity and responsible use of AI technologies in research.

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