Initial Development and Validation of a Questionnaire for Students’ Artificial Intelligence Knowledge in Education

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Abstract—This research investigates students’ knowledge in the use of Artificial Intelligence (AI) in education through the administration of a formulated questionnaire. Drawing upon insights from thematic analysis of qualitative responses and computation of Cronbach’s alpha coefficients, the study aims to produce a tool to assess tertiary level students’ understanding regarding AI integration in academic settings. Results reveal varying degrees of awareness, knowledge, and confidence among students, highlighting thematic areas such as perceived benefits, ethical considerations, and disciplinary perspectives. While the questionnaire demonstrates validity, reliability, and scalability as a measurement tool, limitations including response bias and generalizability are acknowledged. Implications for educational practice and research are discussed, emphasizing the utility of the questionnaire in informing curriculum development, professional development initiatives, policy decisions, and future research directions. Overall, this research provides valuable insights into students' perspectives on AI in education, offering a foundation for enhancing AI literacy, fostering ethical awareness, and shaping the future of AI integration in educational settings.

Keywords—AI Integration, AI Tool, Artificial Intelligence, Education, Educational Technology

I. INTRODUCTION

Artificial Intelligence (AI) has become a transformative force across various sectors, and education is no exception. In tertiary education, the integration of AI holds great promise for enhancing learning outcomes, improving instructional methods, and personalizing education experiences. However, the effective utilization of AI in education hinges upon the proficiency of students in understanding and leveraging AI technologies. Thus, measuring students’ knowledge in the use of AI becomes paramount in ensuring the successful integration and utilization of these technologies in tertiary education settings.

Artificial Intelligence offers numerous advantages in tertiary education. It has the potential to revolutionize traditional teaching methods by providing personalized learning experiences tailored to individual student needs (Pratama & Lura, 2023). Through AI-driven adaptive learning platforms, students can receive customized instruction, feedback, and support, thereby maximizing their learning potential (Gligorea et al., 2023; Fontanilla et al., 2023). Additionally, AI-powered tools can assist educators in developing and delivering content more efficiently, freeing up time for personalized interactions with students (Srinivasa et al., 2022). Moreover, AI algorithms can analyze vast amounts of educational data to identify patterns, trends, and areas for improvement, facilitating evidence-based decision-making in curriculum development and pedagogical practices (Pedro et al., 2019). Despite the potential benefits of AI in education, its effective implementation hinges upon the readiness...
of students to engage with these technologies. Proficiency in AI literacy, including understanding fundamental concepts, principles, and applications of AI, is essential for students to fully harness the capabilities of AI-driven educational tools (George, 2023). Measuring students’ knowledge in AI can provide insights into their preparedness to effectively utilize AI technologies for learning and problem-solving tasks. It can also identify areas where additional instruction or support may be necessary to bridge knowledge gaps and ensure equitable access to AI-driven educational opportunities. Measuring students' knowledge in AI comes with its own set of challenges and ethical considerations. The rapid evolution of AI technologies requires continuous updates to assessment methods to ensure relevance and accuracy. Additionally, ensuring the fairness and transparency of AI-driven assessment tools is essential to mitigate bias and promote equity in educational opportunities (Khan, 2023). Furthermore, fostering ethical awareness and responsible use of AI among students is critical to prevent unintended consequences and promote ethical decision-making in the use of AI technologies.

The goal of this research is to create a basis for gauging tertiary level students’ knowledge in the use of AI in education. The researchers achieved this by utilizing a mixed-method approach in order to gain insights from the students and use said insights to formulate a questionnaire, which was later on validated through a quantitative procedure. The successful integration of AI in tertiary education depends on the proficiency of students in understanding and leveraging AI technologies. Measuring students’ knowledge in AI is essential to assess their readiness for engaging with AI-driven educational tools and to identify areas for improvement. However, addressing challenges related to assessment methods, bias, and ethics is crucial to ensure the fairness, transparency, and responsible use of AI in education. By prioritizing the measurement of students' knowledge in AI, educators and policymakers can facilitate the effective integration of AI technologies in tertiary education and empower students to thrive in an AI-driven world.

II. UNDERSTANDING AI LITERACY

A. AI as tool in Education

AI literacy represents a multifaceted understanding of Artificial Intelligence (AI) that transcends surface-level familiarity with AI technologies. It necessitates a profound comprehension of AI concepts, principles, and applications, reflecting a deeper engagement with the underlying mechanisms and implications of AI systems. As emphasized by Rajakumaran (2023), students must go beyond the rudimentary grasp of AI tools and delve into fundamental concepts such as machine learning, neural networks, natural language processing, and robotics. Mastery of these foundational concepts empowers students to navigate and effectively utilize AI-driven educational tools in diverse contexts. AI literacy extends beyond technical knowledge to encompass ethical considerations integral to responsible AI usage. Khan (2023) underscores the importance of understanding the ethical implications of AI, including issues of bias, fairness, transparency, and privacy. Students must grapple with complex ethical dilemmas inherent in AI systems, such as the potential for algorithmic bias to perpetuate societal inequalities or the implications of data privacy breaches. By cultivating awareness of these ethical dimensions, students develop the critical thinking skills necessary to evaluate the ethical ramifications of AI technologies and make informed decisions about their usage.

B. Tailoring Education to Student Needs and Promoting Equity and Inclusion

The integration of AI in education holds the promise of personalized learning experiences tailored to individual student needs and preferences (Maghsudi et al., 2021). Through adaptive learning platforms driven by AI algorithms, educational content, feedback, and support are customized based on students' learning patterns, strengths, and weaknesses (Gligorea et al., 2023). However, the effectiveness of personalized learning hinges on students' ability to effectively navigate and utilize these AI-driven tools. Measuring students' knowledge in AI plays a pivotal role in optimizing personalized learning experiences and promoting equity and inclusion in education. Access to AI-driven educational opportunities should be inclusive, regardless of students' backgrounds or prior knowledge of AI (Kumar & Sharma, 2020). By identifying knowledge gaps and areas requiring additional instruction or support, educators can ensure equitable access to AI-driven educational tools for all students. Furthermore, addressing bias and discrimination in AI-driven assessment tools is essential for mitigating disparities and fostering fairness in educational outcomes (Khan, 2023; Madaio et al., 2022; Roshanaei, 2024).
C. Concerns in Students’ AI Proficiency in the Tertiary Education

Studying the importance of AI literacy in tertiary education is pivotal in shaping future professionals who can navigate, contribute to, and critically assess an increasingly AI-driven world. This imperative stems from various factors, including the profound impact AI technologies have on career readiness, research and innovation, ethical considerations, and the evolution of personalized learning experiences.

In today's job market, proficiency in AI literacy is becoming a prerequisite for success across diverse industries (Long & Magerko, 2020). Tertiary education must equip students with the necessary skills and knowledge to leverage AI technologies effectively in their future careers. As AI becomes more prevalent in fields such as healthcare, finance, transportation, and beyond, students with AI literacy, as discussed by Dwivedi et al. (2020) are better positioned to innovate, automate tasks, and drive efficiency in their respective domains. Moreover, tertiary education serves as a hub for research and innovation, making AI literacy indispensable for driving advancements. Whether in the natural sciences, social sciences, or humanities, AI technologies offer unprecedented opportunities for data analysis, pattern recognition, and predictive modeling. By fostering AI literacy, tertiary institutions empower students to harness these tools to tackle complex problems, discover new insights, and contribute to cutting-edge research endeavors.

However, alongside the promises of AI lie significant ethical considerations that demand careful examination. Tertiary education provides a crucial platform for students to engage in thoughtful discourse surrounding the ethical implications of AI development and deployment (Houser, 2019). Issues such as bias and discrimination, job displacement, and data privacy necessitate informed and ethically grounded decision-making. Through interdisciplinary dialogue and critical reflection, students can develop the ethical frameworks needed to navigate the ethical complexities of AI technologies responsibly. Despite the strengths and promises of AI, there are also notable threats and challenges that must be addressed. Job displacement resulting from automation (Lazaroiu & Rogalska, 2023), for instance, poses significant socioeconomic challenges that require proactive measures and policy interventions. Additionally, the rapid pace of technological advancement in AI necessitates continuous learning and adaptation within tertiary education. Institutions must stay abreast of emerging trends and developments to ensure that educational curricula remain relevant and effective in preparing students for the AI-driven future.

In addressing these challenges, tertiary education can leverage its strengths to foster interdisciplinary collaboration, promote innovation, and cultivate ethical leadership. By providing accessible and comprehensive AI education, institutions can empower students to harness AI technologies responsibly while mitigating potential risks and maximizing societal benefits. Furthermore, by integrating AI literacy across disciplines, tertiary education can prepare students to address complex challenges holistically and contribute meaningfully to a rapidly evolving global landscape. Studying the importance of AI literacy in tertiary education is essential for preparing students to thrive in an AI-driven world. By equipping students with the necessary skills, knowledge, and ethical awareness, tertiary institutions play a pivotal role in shaping the future workforce and advancing societal well-being in the age of AI. Through interdisciplinary collaboration, critical inquiry, and a commitment to ethical principles, tertiary education can harness the transformative potential of AI to create a more inclusive, innovative, and sustainable future for all.

III. Methodology

A. Research Method

The mixed-method approach chosen for this research was particularly suited to capture the intricacies of students’ knowledge regarding AI platforms in writing. By combining ethnographic study and descriptive quantitative research, the researchers aimed to gain a comprehensive understanding of this complex phenomenon. Ethnographic study allowed for an in-depth exploration of students' perspectives, attitudes, and behaviors towards the use of AI platforms, while descriptive quantitative research provided quantifiable data for instrument validation.

B. Sample

Convenience sampling, although not without limitations, was deemed appropriate due to its practicality and feasibility within the research context. It enabled the researchers to efficiently recruit participants from the target
population of tertiary level students in Bulacan, thereby facilitating data collection within the constraints of time and resources. 15 students provided their responses to the structured essay questions while 100 students participated in the initial validation of the formulated tool.

C. Data Gathering and Processing

The qualitative component of the study employed a structured essay question to elicit rich, detailed responses from participants. This approach allowed for the exploration of students' nuanced perceptions and experiences regarding the integration of AI platforms into their academic writing practices. Thematic analysis, a systematic method for identifying and analyzing patterns within qualitative data, was employed to derive meaningful insights from the collected responses. This rigorous analytical process ensured that the findings accurately reflected the diverse range of perspectives within the participant sample.

In contrast, the quantitative instrument, a questionnaire comprising 15 items, provided a standardized means of assessing students' knowledge and attitudes towards AI platforms. Drawing on insights from the qualitative analysis, the questionnaire was designed to cover key aspects of AI integration in academic writing, thereby facilitating the initial validation of the instrument. By administering the questionnaire to a larger sample of 100 students, the researchers sought to establish the reliability and validity of the instrument, thereby enhancing its utility for future research endeavors.

The decision to conduct data gathering through online platforms such as Facebook, X, and Instagram was strategic, considering the widespread usage of these platforms among tertiary level students. This approach not only facilitated participant recruitment but also promoted inclusivity and accessibility, allowing students from diverse backgrounds to contribute to the study.

Finally, the validation process of the quantitative instrument through Cronbach's Alpha coefficient underscored the researchers' commitment to ensuring the robustness and validity of their findings. By assessing the internal consistency of the questionnaire items, the researchers were able to ascertain the reliability of the instrument in measuring students' knowledge and attitudes towards AI platforms in writing. This meticulous approach to instrument validation further enhances the credibility and rigor of the research findings, thereby contributing to its potential impact and significance within the scholarly community.

D. Ethical Considerations

Before commencing data collection, all participants provided informed consent to the researchers. They were thoroughly briefed on the study's objectives, methodologies, and potential implications concerning their data. Moreover, the research strictly adhered to the Data Privacy Act of the Philippines, ensuring that the collection, preservation, and processing of information were conducted in compliance with pertinent data protection laws. Throughout the research process, utmost attention was paid to safeguarding the privacy and anonymity of the participants. Furthermore, the study upheld academic integrity standards by appropriately citing and referencing sources in accordance with the APA 7th format.

IV. RESULTS

A. Thematic Analysis Summary: Students' AI Knowledge Interview

<table>
<thead>
<tr>
<th>Condensed Meaning Unit</th>
<th>Codes</th>
<th>Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Many students demonstrated a basic awareness of AI technology but varied in their depth of understanding regarding its applications in academia.</td>
<td>Awareness Knowledge Understanding</td>
<td>Awareness and Understanding of AI</td>
</tr>
<tr>
<td>Some students expressed confidence in their understanding of AI's potential to streamline academic tasks such as writing assistance and data analysis, while others admitted to limited knowledge in this area.</td>
<td>Enhanced learning Personalized experience</td>
<td>Perceived Benefits of AI in Academics</td>
</tr>
<tr>
<td>Across different programs, students acknowledged the potential benefits of AI in enhancing learning experiences and academic performance.</td>
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</tr>
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Students highlighted AI's capacity to facilitate personalized learning, automate repetitive tasks, and provide access to vast amounts of information, thereby improving efficiency and productivity in academic pursuits.

A recurring theme among students was concern regarding the ethical implications of AI usage in academics.

Some students raised questions about AI's impact on job displacement, data privacy, and intellectual property rights, reflecting a critical stance towards the integration of AI in educational settings.

Responses varied regarding students' confidence and competence in utilizing AI tools for academic purposes.

While some students expressed confidence in their ability to navigate AI platforms and utilize AI-driven resources effectively, others admitted to feeling overwhelmed or uncertain about how to integrate AI into their academic workflows.

Students from different academic programs exhibited distinct perspectives on AI's relevance and applicability within their respective fields.

For instance, students in STEM disciplines emphasized AI's role in data analysis, programming, and scientific research, whereas those in humanities and social sciences highlighted its potential impact on creative writing, language translation, and sociocultural analysis.

Many students expressed optimism about the future integration of AI in academia, viewing it as an opportunity to enhance learning outcomes and innovate educational practices.

Students discussed the potential for AI to revolutionize teaching methods, personalize learning experiences, and address pressing challenges in education, such as accessibility and inclusivity.

This thematic analysis underscores the multifaceted nature of students' perspectives on AI in academics, encompassing varying degrees of awareness, concerns, and aspirations across different academic disciplines. These insights provide valuable implications for educators, policymakers, and AI developers seeking to harness the potential of AI technology to advance teaching and learning in tertiary education.

B. Formulated Questions for the AI Knowledge in Education Tool Based on the Responses of the Informants

| TABLE II | STUDENTS’ AI KNOWLEDGE IN EDUCATION TOOL |

| 1. What does AI stand for? | a) Automated Interaction  
| | b) Artificial Intelligence*  
| | c) Advanced Innovation  
| | d) Automated Integration  |

| 2. Which of the following is NOT a potential application of AI in education? | a) Personalized learning  
| | b) Grading assignments  
| | c) Virtual reality simulations  
| | d) Crop rotation techniques* |

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### 3. How can AI enhance the learning experience for students?
- a) By replacing human teachers entirely
- b) By providing personalized learning experiences*
- c) By eliminating the need for homework assignments
- d) By increasing classroom sizes

### 4. Which of the following is an example of AI in educational content creation?
- a) Generating practice questions for students*
- b) Monitoring student attendance
- c) Ordering textbooks for a course
- d) Providing counseling services

### 5. What ethical concern is associated with the use of AI in education?
- a) Decreased efficiency in grading assignments
- b) Job displacement for educators*
- c) Lack of access to educational resources
- d) Excessive workload for students

### 6. How can AI assist in grading assignments?
- a) By providing instant feedback to students*
- b) By randomly assigning grades to students
- c) By ignoring plagiarism detection
- d) By decreasing grading accuracy

### 7. What is the main advantage of using AI in adaptive learning platforms?
- a) One-size-fits-all approach to learning
- b) Personalized learning experience for each student*
- c) Limited access to educational resources
- d) Decreased student engagement

### 8. Which discipline might benefit the most from AI-powered data analysis tools?
- a) History
- b) Mathematics*
- c) Music
- d) Sociology

### 9. How can AI contribute to improving accessibility in education?
- a) By increasing tuition fees
- b) By providing real-time translation services*
- c) By excluding students with disabilities
- d) By decreasing access to educational materials

### 10. Which of the following is NOT a potential challenge associated with integrating AI in education?
- a) Ensuring data privacy and security
- b) Addressing biases in AI algorithms
- c) Increasing efficiency in grading assignments*
- d) Adapting to rapid technological advancements

### 11. What role can AI play in enhancing professional development?
- a) By replacing employees with AI-powered robots
- b) By providing personalized outputs for workers*
- c) By decreasing access to professional development resources
- d) By ignoring the need for ongoing learning

### 12. Which of the following is a benefit of AI-powered tutoring systems?
- a) Decreased student engagement
- b) Limited access to personalized feedback
- c) Tailored learning experiences for individual students*
- d) No impact on student academic performance

### 13. How can AI contribute to addressing learning gaps among students?
- a) By increasing educational inequalities
- b) By providing personalized interventions and support*
- c) By excluding students with diverse learning needs
- d) By decreasing access to educational resources

### 14. What is the primary purpose of using AI in educational research?
- a) To decrease data analysis accuracy
- b) To ignore emerging trends in education
- c) To identify patterns and insights from large datasets*
- d) To exclude researchers from the data analysis process
15. How might AI impact the future of education?
   a) By decreasing the importance of human teachers
   b) By revolutionizing teaching and learning practices*
   c) By limiting access to educational resources
   d) By disregarding the need for ongoing learning opportunities

   *correct answer

  Scoring. Assign points for each correct answer. Calculate the total score for each teacher based on their responses.

  Interpretation
  0-5 points: Limited AI knowledge
  5-10 points: Moderate AI knowledge
  10-15 points: Strong AI knowledge

  C. Measuring the Validity of the Formulated Questionnaire Using Cronbach’s Alpha

  The 15 questions were clustered into three groups of five questions each based on their thematic similarity.

  Group 1: Knowledge and Understanding of AI (Questions 1-5)
  Group 2: Perceived Benefits and Applications of AI in Academics (Questions 6-10)
  Group 3: Concerns, Ethical Considerations, and Future Implications of AI (Questions 11-15)

  The next process of validation was to compute the Cronbach's alpha for each group using the provided responses from the 100 students. After obtaining the alpha values for each group, the overall Cronbach's alpha for the entire questionnaire was calculated.

<table>
<thead>
<tr>
<th>Section</th>
<th>Cronbach’s Alpha</th>
<th>Interpretation</th>
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</thead>
<tbody>
<tr>
<td>Group 1: items 1-5 (Knowledge and Understanding of AI)</td>
<td>0.75</td>
<td>This indicates good internal consistency among the items in Group 1. It suggests that the five questions in this group are measuring a similar construct related to knowledge and understanding of AI, and they are reliable when used together.</td>
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<tr>
<td>Group 2: items 6-10 (Perceived Benefits and Applications of AI in Academics)</td>
<td>0.80</td>
<td>This value suggests excellent internal consistency among the items in Group 2. It indicates that the five questions in this group are effectively measuring the perceived benefits and applications of AI in academics, demonstrating high reliability as a set.</td>
</tr>
<tr>
<td>Group 3: items 11-15 (Concerns, Ethical Considerations, and Future Implications of AI)</td>
<td>0.71</td>
<td>This value indicates acceptable internal consistency among the items in Group 3. While slightly lower than the other groups, it still suggests that the five questions in this group are measuring similar constructs related to concerns, ethical considerations, and future implications of AI, and they are reasonably reliable as a set.</td>
</tr>
<tr>
<td>Overall Cronbach's Alpha of the Questionnaire</td>
<td>0.78</td>
<td>This value represents the internal consistency of the entire questionnaire comprising all 15 items. An overall alpha of 0.78 suggests good internal consistency among the entire set of questions. It indicates that the questionnaire as a whole is reliable in measuring students' knowledge, perceptions, and concerns regarding the use of AI in education.</td>
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  The observed internal consistency within each thematic group, ranging from good to excellent, underscores the reliability of the questionnaire in effectively capturing the intended constructs pertaining to AI in education. This implies that the questions within each thematic category align closely with one another, consistently measuring the targeted aspects of knowledge, perceptions, and concerns regarding AI utilization within academic settings.

  Furthermore, the overall internal consistency of the questionnaire, reflected in its commendable Cronbach's alpha coefficient, reinforces the notion of its reliability in assessing the broader spectrum of AI-related concepts.
across all 15 items. This collective reliability assures researchers and practitioners that the questionnaire as a whole is adept at accurately gauging various facets of students' understanding, attitudes, and ethical considerations surrounding AI integration in education.

In essence, these results affirm the questionnaire's efficacy as a valuable instrument for exploring and evaluating students' perspectives on AI in education. Its demonstrated internal consistency not only enhances the credibility of the research findings but also instils confidence in its utility for future studies aiming to delve deeper into the multifaceted landscape of AI's impact on academic environments.

V. CONCLUSIONS

Based on the results of the study, a discussion can be generated, highlighting key findings and their implications for understanding students' perspectives on AI in education. The study revealed that while many students demonstrated a basic awareness of AI technology, there was variability in the depth of their understanding regarding its applications in academia. This suggests the need for targeted educational interventions to enhance students' knowledge and understanding of AI concepts and their relevance in educational contexts, as jiving with the findings of the study of George (2023). Educators could incorporate AI literacy curricula to equip students with the necessary skills and knowledge to navigate AI-driven educational tools effectively. Students across different academic programs acknowledged the potential benefits of AI in enhancing learning experiences and academic performance. They highlighted AI's capacity to facilitate personalized learning, automate repetitive tasks, and provide access to vast amounts of information. These findings underscore the importance of leveraging AI technologies to optimize teaching and learning processes, improve efficiency, and enhance educational outcomes as emphasized as well by Pratama et al., (2023).

A recurring theme among students was concern regarding the ethical implications of AI usage in academics (Khan, 2023). This included concerns about job displacement, data privacy, intellectual property rights, and algorithmic bias. These findings emphasize the importance of fostering ethical awareness and critical thinking skills among students to navigate the ethical challenges associated with AI technologies responsibly. Responses varied regarding students' confidence and competence in utilizing AI tools for academic purposes. While some students expressed confidence in their ability to navigate AI platforms effectively, others admitted to feeling overwhelmed or uncertain. This highlights the need for targeted support and training initiatives to build students' confidence and competence in utilizing AI-driven resources for academic tasks. Further, students from different academic programs exhibited distinct perspectives on AI's relevance and applicability within their respective fields. For instance, students in disciplines emphasized AI's role in data analysis and scientific research, whereas others also highlighted its potential impact on creative writing and sociocultural analysis. These disciplinary differences underscore the importance of tailoring AI education initiatives to meet the specific needs and contexts of different academic disciplines.

Despite concerns and challenges, many students expressed optimism about the future integration of AI in academia. They viewed AI as an opportunity to revolutionize teaching methods, personalize learning experiences, and address pressing challenges in education, such as accessibility and inclusivity. These findings highlight the transformative potential of AI technologies in reshaping the future of education and underscore the importance of embracing AI-driven innovations to enhance teaching and learning practices.

The formulated questionnaire to measure students' knowledge in the use of AI in education represents a crucial tool for assessing students' understanding, perceptions, and concerns regarding AI integration in academic settings, providing insights into their awareness of AI concepts, perceived benefits, ethical considerations, and future implications. By systematically assessing students' responses to a range of thematic questions, the questionnaire offers a comprehensive overview of students' perspectives on AI integration in academic environments.

Firstly, the questionnaire encompasses a diverse range of thematic areas, including knowledge and understanding of AI, perceived benefits and applications, concerns and ethical considerations, confidence and competence in AI utilization, disciplinary perspectives, and future implications. This comprehensive coverage ensures a holistic assessment of students' perspectives on AI in education. Further, the questionnaire underwent
rigorous validation processes, including thematic analysis of qualitative responses and computation of Cronbach's alpha coefficients to assess internal consistency. This ensures the validity and reliability of the questionnaire as a measurement tool for assessing students' knowledge in the use of AI in education. Moreover, the questionnaire is designed to be scalable and adaptable to different educational contexts, allowing researchers and educators to administer it across diverse student populations and academic settings. Lastly, the insights obtained from the questionnaire can inform the development of targeted educational interventions aimed at enhancing students' AI literacy, fostering ethical awareness, and promoting responsible AI usage in academic environments.

VI. RECOMMENDATIONS

The questionnaire may be susceptible to response bias, as students may provide socially desirable responses or may lack awareness of AI concepts, leading to inaccuracies in self-reported data. Also, while the questionnaire provides valuable insights into students' perspectives on AI in education, its findings may not be generalizable to all student populations or educational contexts. Variations in students' prior knowledge, cultural backgrounds, and academic disciplines may influence their responses. Additionally, the questionnaire represents a snapshot of students' perspectives at a specific point in time and may not capture changes in attitudes or knowledge over time. Longitudinal studies or follow-up surveys may be needed to track shifts in students' perceptions and understanding of AI in education.

Implications for Educational Practice and Research

1. **Curriculum Development:** The questionnaire findings can inform the development of AI literacy curricula aimed at equipping students with the knowledge, skills, and ethical awareness needed to navigate AI-driven educational environments effectively.

2. **Professional Development:** Educators can use the questionnaire results to identify areas of student misunderstanding or concern and tailor professional development initiatives to address these areas.

3. **Policy Implications:** Policymakers can use the questionnaire findings to inform policies related to AI integration in education, ensuring equitable access to AI-driven educational opportunities and addressing concerns related to ethics, privacy, and bias.

4. **Future Research Directions:** The questionnaire can serve as a springboard for future research exploring students' evolving attitudes, perceptions, and knowledge regarding AI in education. Longitudinal studies, qualitative interviews, and mixed-methods approaches may provide deeper insights into the dynamics of AI integration in academic settings.

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