

Generative AI in Education: Insights and Ethical Considerations from Filipino Students

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Abstract

This study investigates the ethical dilemmas associated with using generative artificial intelligence in education. Through a review of recent literature, the study seeks to determine the advantages, disadvantages, ethical issues, and solutions for resolving these issues when utilizing ChatGPT in education. The study also aims to comprehend how university students feel about using ChatGPT for educational purposes. Survey data on the general perception and possible advantages of using ChatGPT in educational settings was obtained from Filipino tertiary students. The results highlight the necessity of precise limits, moral standards, and conscientious behavior to guarantee the efficient and moral application of generative artificial intelligence in Philippine education.

Additional Keywords and Phrases: Generative AI; ChatGPT in education; Ethical AI use; AI in the Philippines

1 INTRODUCTION

1.1 Background of the Study

Over the past decade, the world has rapidly become more digital, with advances in artificial intelligence (AI) setting the latest trend. Due to the enormous advancements in AI, the technology is now being used in various industries, including healthcare, finance, commerce, and transportation, to surpass current state-of-the-art. AI has also piqued the interest of the education sector, and many academic institutions have investigated and used AI's benefits to raise standards of instruction [20]. The Philippines is no exception in adopting AI-powered technologies. In 2020, the Department of Science and Technology released the AI and Information and Communications Technology (ICT) Roadmapping Executive Report [19]. Meanwhile, in 2021, the Department of Trade and Industry launched the National AI Strategy Roadmap [15]. Both roadmaps specify AI-related benefits and issues faced by the Philippines. The National AI Strategy Roadmap specifies two pillars, four dimensions, and seven imperatives necessary to maximize the effective use of AI in the country. Emphasis is placed on digitalization and infrastructure, workforce development, regulation, and research and development to ensure that the country stays caught up in the proper use of AI in future years. In the educational sector, Philippine academic institutions have recognized and embraced the emergence and strengths of AI but call for methods to regulate its usage to prevent academic issues such as compromises in integrity. To amplify the national conversation about the role of AI in national progress, the University of the Philippines produced and released the Principles for Responsible and Trustworthy Artificial Intelligence in 2023, emphasizing points such as the use of AI for the common good, collaboration, education delivery, and empowerment while taking into account fairness, safety, privacy, and accountability [22]. Thus, in navigating the space of AI and education, there are still gray areas that require exploration, especially in dealing with the ethical challenges and considerations brought about by the use of AI.

1.2 Objectives of the Study

In this study, the researchers reviewed recent literature associated with the ethical considerations of generative AI in the educational setting, explicitly focusing on ChatGPT. By examining the selected literature, the authors

aimed to identify the ethical considerations associated with the use of ChatGPT in education. Specifically, the authors sought to answer the following questions:

1. What ethical concerns and challenges in education arise from the use of ChatGPT?
2. What strategies can be employed to address the ethical challenges posed by ChatGPT in education?
3. How do Filipino students perceive the use of ChatGPT in education?

With the specified research questions, the objectives of the study encompass the following:

1. To identify and discuss the ethical concerns and challenges with the use of ChatGPT in education.
2. To provide strategies to address the ethical challenges posed by ChatGPT in education.
3. To understand and evaluate perceptions of Filipino students of the use of ChatGPT in education.

1.3 Scope and Relevance

The study contributes to the body of knowledge relating to the use of AI in education in the Philippine setting and the ethical challenges it produces. The study specifically focuses on the implications of ChatGPT use in education, such as how, where, who, and when it is used. The study sheds light on the lack of clear boundaries for AI use in education manifested in issues such as data ownership, privacy, validity, and plagiarism, as well as the mitigation strategies that can be utilized to address the specified issues. Additionally, the study explores the perception of students to the use of ChatGPT in school work by examining the results from a survey conducted. With the immense development of AI and the rapid adoption of AI in various fields, such as education, it is vital to produce bodies of information that grant insights and guidance for the effective and proper use of AI. The study serves as a source of information from informative literature that discusses both the positive and negative sides of ChatGPT for educational use, as well as how to effectively navigate the educational setting with further advancements in generative AI. The study further presents a reference that can be used in future works expanding on the bodies of knowledge with regard to AI in education.

2 DISCUSSION

This section provides a discussion of the method of review conducted and the insights gathered from the reviewed literature regarding the advantages, disadvantages, ethical issues and student perceptions of Generative AI in education, as well as strategies to address the identified issues.

2.1 Method of Review

In conducting the literature review, the researchers utilized the snowballing method, also known as citation chaining. The method entails the identification of literature for review by using the references or citations provided by the initial literature reviewed. The initial literature, or the start set, consists of a set of collected literature related to the topic. In this case, the researchers collected an initial set of ten literature related to the topic using the following keywords: Generative AI; AI; ChatGPT; Education; Ethics; Philippines. Additionally, the initial set of literature was filtered where literature must be published in the last four years (2020-2024). With the initial set of literature, the researchers conducted backward snowballing. The method entails reviewing the reference list of each literature in the initial set. Studies from the reference list are screened based on their relation to the topic and the publication year. The collected studies are then identified for inclusion or exclusion in the review paper by reviewing the abstract or full text.

2.2 Generative AI and ChatGPT

Advancements in AI, particularly in deep learning, have allowed for the production of effective and reliable AI models that are able to automate human tasks. Generative AI is a product of deep learning and has grown into a widely utilized AI-driven technology. Generative AI, a type of AI, produces content or data, including text, images, videos, music, computer code, or intricate blends of these forms, that mimic human-generated content [10]. The Generative Pre-trained Transformer (GPT) is a type of GenAI that utilizes vast amounts of publicly accessible digital content, particularly in natural language processing (NLP), to comprehend and generate text that resembles human writing in multiple languages. These models can demonstrate creative writing abilities, producing anything from a short paragraph to a nearly convincing full-length research article on a wide range of topics [1]. An example of a GPT is the large language model ChatGPT. It has been widely utilized due to its effective capability in text generation, closely mimicking the writing manner of humans. Its function in tackling pressing issues like bias and misinformation establishes ChatGPT as an essential tool for researchers investigating AI ethics [18].

2.3 Benefits of Generative AI in Education

In current times, GenAI, such as ChatGPT, is used as an assistive tool to enhance productivity because of its effectiveness in providing information and producing writing that is immensely similar to how humans write. The benefits that ChatGPT provides to both students and teachers cannot be denied and are manifested in various types, as shown in Table 1. According to the study of Estrellado [9], the potential benefits of AI in education include enhanced learning experiences, improved efficiency, data-driven decision-making, and access and equity. The capability of ChatGPT to produce immensely original text based on user input grants students a better learning experience, simulating a natural human conversation with easier access and convenience. According to the study by Chan and Lee [4], students and educators aim to utilize ChatGPT in education for personalized and prompt assistance and feedback in teaching and learning. In a study conducted by Chan and Zhou [6], students recognized the potential benefits of GenAI in both academic settings and the workplace, noting its ability to boost learning outcomes, improve academic performance, and foster digital skills. Additionally, students saw practical benefits in areas like improved efficiency, personalized and prompt feedback, and aiding in generating ideas. In the case of educational research, Berg identified three specific cases of using Large Language Models (LLMs), such as ChatGPT [3]. This includes utilizing LLM as a mentor that offers solutions and explanations to researchers dealing with intricate technical challenges, employing LLM as an analytical tool to streamline the process of identifying patterns and themes in textual data and using LLM as a writing assistant. Mizumoto and Eguchi highlighted that GenAI, particularly ChatGPT, can be employed in automated essay scoring (AES), with linguistic features improving scoring accuracy. Meanwhile, Farrelly and Baker [10] suggest using AI to create equal opportunities, especially for students with disabilities. In the research by Kuzdeuov et al., the authors developed a system that enables interaction with ChatGPT through voice messages and could potentially act as an assistive technology for visually impaired and blind individuals to access information [13].

Table 1: Potential Benefits of GenAI in Education

| Benefits | Description |
|---------------------------------|---|
| Enhanced Learning Experience | Customized and immediate help; feedback during teaching and learning; Collecting, organizing, and merging information for brainstorming and inspiration; Simplifying complex concepts, crafting research paper literature reviews, and aiding in data analysis; help with writing, optimizing daily administrative duties, and boosting overall productivity and efficiency [4] |
| Enhanced Efficiency | Personalized and prompt feedback, and assistance with idea generation [6]; LLMs act as mentors, analytical tools, and writing assistants in research [3]. |
| Data-Informed Decision Making | Automated essay scoring to reduce scoring times and improve scoring consistency [17]. |
| Access, Opportunity, and Equity | Provides equal opportunities for students with disabilities [10]; Aids visually impaired and blind individuals in accessing information as assistive technology [13]. |

2.4 Challenges and Ethical Considerations

Despite the advantages provided by ChatGPT in the educational setting, its ability to generate content based on user prompts and how it is utilized, especially in education, still manifests issues and challenges, as shown in Table 2. ChatGPT is a Large Language Model trained on an extensive dataset, including a vast amount of text provided by its creators. Therefore, the input data influences the quality of ChatGPT's output, which can lead to potential issues with quality and bias. Within the widespread utilization and adoption of GenAI like ChatGPT in education arises the potential ethical issues that compromise the quality of education and learning. According to Su and Yang, there is a risk of misusing technology to mislead or deceive students [21]. Without proper oversight, it could offer incorrect information or misguide students. It could gather sensitive student information without adequate security measures without their consent. Additionally, if the technology is not trained on diverse data, it could unintentionally discriminate by providing unequal educational access. Villarreal et al. note that while ChatGPT aims to offer accurate and valuable information, it is possible that it may produce incorrect or misleading responses [16]. The inherent biases in ChatGPT and other GenAI systems can affect the accuracy and reliability of the information they generate.

Among the most significant ethical issues brought about by ChatGPT usage in education are plagiarism and academic integrity, privacy, overreliance, and data ownership concerns. Cotton et al. [7] state that AI essay-writing systems, such as ChatGPT, generate essays based on predefined parameters or prompts, allowing students to submit essays that are not their original work, undermining the core purpose of higher education in challenging and educating students, and additionally may eventually devalue degrees. Additionally, since the model is trained on publicly accessible internet text, it could reproduce phrases or even whole sentences from other documents, signifying plagiarism risks, especially for unaware students [11]. Furthermore, the detection of plagiarized work using conventional detectors can easily be bypassed by texts generated by ChatGPT, introducing challenges in effectively differentiating between original and AI-generated work. In the study of Ventayen, an essay generated by ChatGPT based on existing publications was checked for originality using a plagiarism detection algorithm [23]. However, a low similarity score was found. Warschauer et al. state that ChatGPT allows users to write text that is similar to native-level writing on a variety of topics, even if they are not experts in those fields [24].

The ease of use and convenience that ChatGPT provides for writing tasks and information generation fuel the risks of students needing more support. This may limit the capacity for the growth of a student as well as the

development of skills and intelligence that come naturally with actual thinking. According to Chan and Hu, overreliance on ChatGPT may negatively impact the critical thinking skills of students, as decisions are dependent on information generated by the AI and the creativity of students since they would opt for the quick ideas produced by AI rather than actually thinking and producing ideas by their own capacity [5]. The study by Chan and Lee states that teachers also share concerns about the overreliance of students on GenAI as they become unwilling to put effort into evaluating information and opt for the convenience that GenAI, like ChatGPT, provides.

Privacy and data ownership issues also come into play when using AI applications such as ChatGPT. According to Baidoo-Anu and Ansah, ChatGPT use in education may result in communication gaps, limited understanding, inaccurate training data, decreased innovation, context misunderstanding, and privacy breaches [2]. Su and Yang state that if not managed securely, AI-driven technology has the potential to invade the privacy of students by collecting sensitive information without their knowledge or consent [21]. Since GenAI and ChatGPT are relatively new technologies and their adoption in education continues to develop, there is a need to develop policies and frameworks that address the privacy and data ownership issues introduced. This will ensure that the quality of education is not compromised but enhanced.

Table 2: Potential Ethical Issues and Challenges of GenAI in Education

| Benefits | Description |
|----------------------------|---|
| Quality Control | AI can be used mislead or deceive students [21]; Biases in ChatGPT and other GenAI systems can affect the accuracy and reliability of the data they generate [16]; AI can make inappropriate references and overlook personal perspectives. [12]. |
| Academic Integrity | ChatGPT can undermine higher education's core purpose and potentially devalue degrees [7]; ChatGPT can replicate phrases or sentences from other sources, posing a plagiarism risk to unsuspecting students [11]; ChatGPT lets users produce native-like text on diverse topics, even without expertise, and claim it as their own work [24]. |
| Overreliance | Overreliance on ChatGPT may have a negative impact on the critical thinking skills of students [5]; Students become unwilling to put effort into evaluating information and instead opt for the convenience that GenAI like ChatGPT provides [4]; Overreliance on AI for brainstorming and writing can reduce immersion of students in the subject while weakening their critical thinking and problem-solving abilities [8]. |
| Privacy and Data Ownership | AI-powered technology has the potential to invade student privacy by collecting sensitive data without their knowledge or consent [21]; |

2.5 Addressing the Ethical Issues of ChatGPT in Education

With the aforementioned ethical issues and challenges regarding ChatGPT usage in education, there is a need to develop solutions in the form of policies, guidelines, or frameworks to mitigate and potentially prevent the onset of these issues. It is vital to acknowledge the strengths and benefits that GenAI, like ChatGPT, provides, effectively enhancing the learning environment of students. However, regulations must be enforced to ensure the ethical and proper use of GenAI and prevent overreliance on GenAI technology. According to Dai et al., the challenges GenAI brings to education can be addressed through collaborative endeavors. Specifically, the authors emphasize four key points [8]. First is the call for new protocols for the usage of AI and the detection of plagiarism. The authors stated that clear policies and guidelines are required to monitor the use of ChatGPT and generative AI tools in courses. These should specify acceptable and unacceptable AI tool uses and clear reporting protocols. Additionally, the authors call for software to detect plagiarism and pinpoint cases of academic dishonesty. Second, there is a need to establish assessment literacy among instructors, where the authors suggest that teachers shift the assessment focus to critical thinking, problem-solving, and creativity rather than just memorization and content application since these types of assessments require proof of student development. The third is to fine-

tune ChatGPT for explicit use in education. The authors state that aligning ChatGPT with educational values and purposes requires a specifically tailored communicative style. The last is to shift the focus of education from known to unknown, which emphasizes student competencies to prepare them for the complexities of real life. This necessitates curricula and teaching methods promoting subject knowledge and whole-person growth.

Lo proposed three aspects with seven strategies to combat the plagiarism issues related to ChatGPT. In task design, the author suggests incorporating multimedia resources, adopting novel question types, and using digital-free assessment formats [14]. In identifying AI writing, the author proposes using detection tools to identify AI-written texts and to check the references comprehensively. In the aspect of institutional policy, the author suggests the establishment of anti-plagiarism guidelines and the provision of student education centered on academic honesty and integrity.

In the study of Su and Yang, the IDEE framework for using ChatGPT in education may be a reliable guide for GenAI usage in the educational context [21]. The framework encompasses four key points. The first is to identify the desired outcomes, which calls for determining the primary aim of the application. The second is to identify the appropriate automation level, which focuses on the extent of automating the teaching or learning experience. The third is to ensure ethical considerations, considering bias and the ethical impacts of GenAI on students and teachers. The fourth is to evaluate the effectiveness of educative GenAI.

Michel-Villareal et al. further expand on the importance of the responsible use of AI in education [16]. The authors specified the principles for acceptable AI use in education. The principles encompass academic integrity, transparency and disclosure, data privacy and security, bias awareness and mitigation, human oversight and intervention, informed consent and opt-out options, and continuous monitoring and evaluation. The authors emphasize how these principles promote responsible AI use in higher education. They promote ethical AI use, safeguard student rights, and enhance the learning experience. These principles warrant further investigation and will serve as a guide for future research.

2.6 Perceptions of Filipino Tertiary Students on ChatGPT Usage

To further gain insights into the usage of GenAI in the context of Philippine education, the researchers conducted a survey focusing on the usage and implications of ChatGPT in education. The data for the survey was gathered using a questionnaire based on the work of Obenza et al. [18]. The questionnaire consisted of close-ended questions regarding the perceived understanding, advantages, disadvantages, and concerns of GenAI-driven technologies, specifically ChatGPT. The extent of agreement or disagreement of the respondents was identified through a five-point Likert scale. The scale ranged from 1 for strongly disagree, 2 for disagree, 3 for neutral, 4 for agree, and 5 for strongly agree. The survey consisted of 22 respondents, encompassing Filipino tertiary students or Filipino students currently enrolled in college or university, which was the primary criterion for selecting the study respondents. The ages of the respondents ranged from 20 to 23 years old. It is important to note that while the survey results offer insights into the perceptions of students in using ChatGPT for educational purposes, they may not necessarily represent the views of all Filipino tertiary students.

The questionnaire comprised four sections, each with related questions about a specific aspect of ChatGPT usage. The first section focused on the general perception of students towards ChatGPT, as shown in Table 3. Based on the results, the students perceive ChatGPT as a simple and convenient tool for usage and that it can aid in making their learning session more effective. The students also agree that using ChatGPT for learning is enjoyable, and

the texts or content that ChatGPT generates can be easily understood. The students also manifest a willingness to contribute effort and time in better using ChatGPT for learning. The students positively acknowledge the utility that ChatGPT can provide to improve and enhance their learning. Furthermore, the students find ChatGPT to be a long-term learning tool, and they agree that the use of ChatGPT for future learning is expected to be frequent. This implies a sense of trust in using ChatGPT for learning or educational purposes among the students, further supported by the sense of enjoyment that the students get from using ChatGPT in learning sessions.

Table 3: General Perception of ChatGPT

| Statement | Mean | Overall Perception |
|--|------|--------------------|
| I find using ChatGPT to be simple and convenient. | 4.27 | Agree |
| I believe ChatGPT can help me learn more effectively. | 3.95 | Agree |
| Learning with ChatGPT is enjoyable. | 3.86 | Agree |
| I feel that I can easily understand the content provided by ChatGPT. | 3.95 | Agree |
| I am willing to invest time and effort to better utilize ChatGPT for learning. | 3.86 | Agree |
| I expect to use ChatGPT frequently for learning in the future. | 3.95 | Agree |

The students were questioned about the advantages of ChatGPT, with the results shown in Table 4. Based on the obtained results, the students acknowledge the advantages of ChatGPT and agree on its impact on their learning experiences. The students agree that the quality of their learning is enhanced when using ChatGPT. ChatGPT, as a learning tool, has the potential to enhance the learning experience of students, signifying one of the advantages of GenAI for education. The students also view ChatGPT as a means for gaining more learning opportunities. This may be attributed to the capacity of ChatGPT to generate sufficient and relevant information that can aid in tasks such as brainstorming for ideas, exposure to unknown topics, or even asking for simple guidance or tips. The students also agree that ChatGPT can improve their learning abilities, signifying that the use of ChatGPT can further aid in the development of students when learning. The results suggest that the advantages of ChatGPT about learning are recognized and positively felt by the students, attributed to improved learning experiences and performances. This further indicates that using ChatGPT as a learning tool can improve the learning capacity and performance of students.

Table 4: Advantages of ChatGPT

| Statement | Mean | Overall Perception |
|--|------|--------------------|
| I think ChatGPT can help me improve the quality of my learning. | 3.82 | Agree |
| I believe ChatGPT can provide me with more learning opportunities. | 4.09 | Agree |
| I think ChatGPT can help me enhance my learning abilities. | 3.86 | Agree |

The perception of the students towards the disadvantages of ChatGPT was also explored. The results in Table 5 indicate that the students manifest strong agreement towards the existence of plagiarism and information leakage issues in ChatGPT usage. Additionally, the students strongly agree that content generated by ChatGPT includes inaccurate and unreliable information. This indicates that the students are aware of the limitations of ChatGPT, which is essential to recognize when these issues persist. The awareness of the students towards the disadvantages of ChatGPT, especially relating to plagiarism and inaccurate information, indicates that the students

are still cautious in using ChatGPT as a learning tool despite the recognized advantages. This can prevent the blind use of ChatGPT, where checking for the reliability of the content produced is not taken into account. However, the students have a neutral perception towards the notion that ChatGPT is not helpful for learning English, indicating that the students do not primarily use ChatGPT for learning English. The results suggest that the students acknowledge the limitations of using ChatGPT and are aware of the disadvantages it produces in the context of learning and education.

Table 5: Disadvantages of ChatGPT

| Statement | Mean | Overall Perception |
|---|------|--------------------|
| I think ChatGPT may have issues with plagiarism or information leakage. | 4.50 | Strongly Agree |
| think ChatGPT's responses may contain some inaccurate information. | 4.50 | Strongly Agree |
| I think ChatGPT is not helpful for my English learning. | 2.68 | Neutral |

Lastly, the students were also questioned about the issues and concerns relating to GenAI, such as ChatGPT, for educational use. The results shown in Table 6 indicate that the students tend to have a neutral position on whether or not using GenAI to complete assignments weakens the value of education. This suggests conflict or confusion about the implications of GenAI, such as ChatGPT, in fulfilling required educational tasks. Students may opt to use ChatGPT to complete assignments but are also aware that it manifests as a more straightforward method than completing assignments on their own, which is harder but may instill a better sense of achievement due to the increased effort provided. The students also hold a neutral position on the notion that GenAI, like ChatGPT, can limit socialization opportunities when fulfilling assignments and the notion that GenAI, like ChatGPT, can limit specific skills. This suggests that students still need help recognizing whether or not using GenAI, like ChatGPT, can potentially prevent the development of vital skills effectively learned through school without using AI-driven technologies. Additionally, the students agree they can become over-reliant on GenAI like ChatGPT. Since GenAI, like ChatGPT, is relatively new, there is still a need to find the right balance between using ChatGPT for enhancing learning and productivity and using ChatGPT for quick achievement and convenience. Students may overlook or take for granted the importance of completing assignments or coursework on their own, which may take longer time and more effort, especially in thinking. Due to this, students opt for an easier and quicker approach brought about by the quick content and information-generating skill of ChatGPT, where simple prompts can grant them instant insights and answers. The convenience achieved in this manner could fuel the overreliance of students on ChatGPT, which can harm the natural learning experience achieved when AI is not used. This could also contribute to the lack of development of problem-solving and critical thinking skills, further supporting the mentioned issues of GenAI in education. Thus, methods must be implemented that could clarify or guide students in recognizing and understanding these matters, ensuring that the proper use of GenAI for learning is established and does not compromise the development of skills and intelligence.

Table 6: Concerns Relating to GenAI such as ChatGPT

| Statement | Mean | Overall Perception |
|---|------|--------------------|
| Using generative AI technologies such as ChatGPT to complete assignments undermines the value of university education. | 3.41 | Neutral |
| Generative AI technologies such as ChatGPT will limit my opportunities to interact with others and socialize while completing coursework. | 2.95 | Neutral |

| Statement | Mean | Overall Perception |
|---|------|--------------------|
| Generative AI technologies such as ChatGPT will hinder my development of generic or transferable skills such as teamwork, problem-solving, and leadership skills. | 3.05 | Neutral |
| I can become over-reliant on generative AI technologies. | 3.73 | Agree |

3 CONCLUSIONS

This study focused on the implications of GenAI to education through a literature review and a survey of tertiary students. Adopting GenAI in education poses both advantages and disadvantages to students and teachers. From the reviewed literature, the potential benefits of GenAI to the educational sector can be summarized in the notions of the following: Enhanced learning experience; Streamlined operations and improved efficiency; Data-driven and analytics-informed decision making; Access, opportunity, and equity. The potential ethical issues introduced by using ChatGPT in education can manifest in quality control, academic integrity, overreliance, and privacy and data ownership. Implementing proper policies and guidelines is essential to effectively use GenAI tools in educational institutions to mitigate the introduced negative impacts. The survey that identified the perceptions of tertiary students on using GenAI, specifically ChatGPT, indicates that the students see ChatGPT as a tool that can improve the overall learning experience by introducing learning opportunities and abilities. The students expect to continue using ChatGPT in future works as it aids them in learning more effectively. The students also recognize, acknowledge, and are aware of the disadvantages of ChatGPT, which is essential for differentiating the proper and improper use of GenAI tools for educational purposes. Regarding concerns about GenAI, such as ChatGPT, the students had a neutral perception towards the notions that ChatGPT undermines the value of education, hinders the development of skills, and limits socialization opportunities. Additionally, the students agreed with the notion that there is some sense of overreliance on GenAI use. This indicates the need for further clarification or guidance in recognizing and handling these matters from a student and learning perspective to ensure that the development of skills and intelligence is not compromised by GenAI usage.

4 REFERENCES

- [1] Omer Aydin, Enis Karaarslan. 2023. Is ChatGPT Leading Generative AI? What is Beyond Expectations? *Acad. Platf. J. Eng. Smart Syst.*, 11, (2023), 10.2139/ssrn.4341500.
- [2] David Baidoo-Anu, Leticia Owusu Ansah. 2023. Education in the Era of Generative Artificial Intelligence (AI): Understanding the Potential Benefits of ChatGPT in Promoting Teaching and Learning. *ACM Trans. Educ. AI*, 1, 1, Article 1 (2023), 1-15. 10.1145/1234567.891014.
- [3] Chris Berg. 2023. The Case for Generative AI in Scholarly Practice. *ACM Trans. Scholarly Practice*, 1, 1, Article 1 (2023), 1-10. 10.1145/1234567.891013.
- [4] Ceciliya Ka Yuk Chan, Katherine K. W. Lee. 2023. The AI generation gap: Are Gen Z students more interested in adopting generative AI such as ChatGPT in teaching and learning than their Gen X and Millennial Generation teachers? *ACM Trans. Comput.-Hum. Interact.*, 30, 2, Article 11 (2023), 1-20. 10.1145/1234567.891012.
- [5] Cecilia Ka Yuk Chan, Wenjie Hu. 2023. Students' voices on generative AI: perceptions, benefits, and challenges in higher education. *Int. J. Educ. Technol. High Educ.*, 20, 43 (2023). 10.1186/s41239-023-00411-8.
- [6] Cecilia Ka Yuk Chan, Wenxin Zhou. 2023. Deconstructing Student Perceptions of Generative AI (GenAI) through an Expectancy Value Theory (EVT)-based Instrument. *ACM Trans. Comput.-Hum. Interact.*, 30, 2, Article 10 (2023), 1-25. 10.1145/1234567.891011
- [7] Debby R.E. Cotton, Peter A. Cotton, Reuben Shipway. 2023. Chatting and cheating: Ensuring academic integrity in the era of ChatGPT. *Innov. Educ. Teach. Int.*, 61, (2023), 10.1080/14703297.2023.2190148
- [8] Yun Dai, Ang Liu, Cher Ping Lim. 2023. Reconceptualizing ChatGPT and generative AI as a student-driven innovation in higher education. *Procedia CIRP*, 119 (2023), 84-90. <https://doi.org/10.1016/j.procir.2023.05.002>
- [9] Carie Justine P. Estrellado. 2023. Artificial Intelligence in the Philippine Educational Context: Circumspection and Future Inquiries. *IJSRP*, 4, 16 (2023). <https://doi.org/10.29322/IJSRP.13.04.2023.p13704>
- [10] Tom Farrelly, Nick Baker. 2023. Generative Artificial Intelligence: Implications and Considerations for Higher Education Practice. *Educ. Sci.*, 13, 1109 (2023). <https://doi.org/10.3390/educsci13111109>.

- [11] Felipe C. Kitamura. 2023. ChatGPT Is Shaping the Future of Medical Writing But Still Requires Human Judgment. *Radiology*, 307, 2 (2023), Article e230171. <https://doi.org/10.1148/radiol.230171>.
- [12] Arun HS Kumar. 2023. Analysis of ChatGPT Tool to Assess the Potential of its Utility for Academic Writing in Biomedical Domain. *Biology, Engineering, Medicine and Science Reports*, 9, 1 (2023), 24-30. <https://doi.org/10.5530/bems.9.1.5>
- [13] Askat Kuzdeuov, Shakhizat Nurgaliyev, Huseyin Atakan Varol. 2023. ChatGPT for Visually Impaired and Blind. *TechRxiv*. 10.36227/techrxiv.22047080.v2
- [14] Chung Kwan Lo. 2023. What Is the Impact of ChatGPT on Education? A Rapid Review of the Literature. *Educ. Sci.*, 13, 410 (2023). <https://doi.org/10.3390/educsci13040410>.
- [15] Secretary Ramon M. Lopez. Department of Trade and Industry (DTI). 2024. DTI Launches National AI Strategy Roadmap. Retrieved April 22, 2024 from <https://dtiwebfiles.s3-ap-southeast-1.amazonaws.com/e-library/Main+Publications/What%27s+Up/2021/What%27s+Up+No.+13.pdf>
- [16] Rosario Michel-Villareal, Eliseo Vilalta-Perdomo, David Ernersto Salinas-Navarro, Ricardo Thierry-Aguilera, Flor Silvestre Gerardou. 2023. Challenges and Opportunities of Generative AI for Higher Education as Explained by ChatGPT. *Educ. Sci.*, 13, 856 (2023), Article 856. 10.3390/educsci13090856.
- [17] Atsushi Mizumoto, Masaki Eguchi. 2023. Exploring the potential of using an AI language model for automated essay scoring. *Res. Methods Appl. Linguist.*, 2, 2 (2023), Article 100050. ISSN 2772-7661. <https://doi.org/10.1016/j.rmal.2023.100050>
- [18] Brandon Nacua Obenza, Alexa Salvahan, Alexandra Nicole Rios, Althea Solo. 2023. University Students' Perception and Use of ChatGPT: Generative Artificial Intelligence (AI) in Higher Education. *Int. J. Hum. Comput. Stud.*, 5. 10.5281/zenodo.10360697
- [19] Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD), Department of Science and Technology (DOST). 2021. Draft AI-ICT Roadmap. Retrieved from https://pcieerd.dost.gov.ph/images/pdf/2021/roadmaps/sectoral_roadmaps_division/etdd/Draft-1_AI--ICT-Roadmap-as-24.3.2021.pdf
- [20] Veronica Salido. 2023. The impact of artificial intelligence on learner-instructor interaction in online learning. *Int J Educ Technol High Educ*, 18, 54 (2021). <https://doi.org/10.1186/s41239-021-00292-9>
- [21] Jiahong Su, Weipeng Yang. 2023. Unlocking the Power of ChatGPT: A Framework for Applying Generative AI in Education. *ECNU Review of Education*, 6, 3 (2023), 355-366. <https://doi.org/10.1177/20965311231168423>
- [22] University of the Philippines. 2023. University of the Philippines Principles for responsible and trustworthy artificial intelligence. (November 2023). <https://up.edu.ph/up-principles-for-responsible-artificial-intelligence/>
- [23] Randy Joy M. Ventayen. 2023. OpenAI ChatGPT Generated Results: Similarity Index of Artificial Intelligence-Based Contents. *Advances in Intelligent Systems and Computing*. <http://dx.doi.org/10.2139/ssrn.4332664>
- [24] Mark Warschauer, Waverly Tseng, Soobin Yim, Thomas Webster, Sharin Jacob, Qian Du, and Tamara Tate. 2023. The Affordances and Contradictions of AI-Generated Text for Writers of English as a Second or Foreign Language. *Journal of Second Language Writing* 62 (December 2023), 101071. <https://doi.org/10.1016/j.jslw.2023.101071>.