

THE EFFECT OF STUDENTS' USE OF AI IN RESEARCH: TOWARDS POLICY RECOMMENDATIONS ON THE RESPONSIBLE USE OF AI IN SCHOOLS

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Abstract

This study investigated the effect of students' use of AI in research through the lenses of Practical Research (PR) teachers. The Senior High School curriculum has PR1 (Qualitative Research) and PR2 (Quantitative Research), where students are expected to conduct, write, and eventually defend their research. Through an interview, the participants shared how plagiarism and academic honesty are taught in their respective research classes. They also discussed how the responsible use of AI, and technology in general, in research, is emphasized. The pros and cons of students' use of AI in writing research and the challenges that come with its emergence were also identified. It was found that the most commonly used AI by students are those that help them paraphrase ideas they want to cite in their papers, as students find it difficult to contextualize their ideas in writing. On the use of AI-writing assistants, it was observed that the PR teachers had mixed sentiments on its utilization in research. However, all of them were aware of both the beneficial and detrimental effects that it may put forth. As such, they also shared the positive and negative implications of such usage and how they determine whether student submissions were AI-written. Although no student admitted using AI to write their paper, the PR teachers were very honest in saying that they find it difficult to verify whether AI writes the submissions they are getting. In response to the findings, policy recommendations were offered to serve as a guide or basis for the teaching of the responsible utilization of AI in schools.

Keywords: Artificial Intelligence, AI-Utilization, Research, Practical Research, Senior High School, Plagiarism, Academic Honesty.

Introduction

The rise of Artificial intelligence (AI) has the potential to address some of the major issues facing education today, revolutionize methods of teaching and learning, and hasten the achievement of SDG 4 (UNESCO, 2022). Contemporary times have witnessed a surge in AI utilization within research and academic settings, impacting various aspects of scholarly activities. Studies like that of Li et al. (2022) highlight AI's potential to curate and expedite literature reviews, analyze large datasets, and even propose novel research directions and agendas.

However, concerns regarding the ethical considerations of AI utilization and its potential misuse (and overuse) also arise. Works like Liu et al. (2023) emphasize the need for responsible AI practices in research, addressing issues like bias in algorithms and ensuring proper attribution of AI's contributions alongside human researchers. Numerous academics have engaged themselves in the debate of ethical considerations surrounding using AI to aid one's research. Issues have been raised regarding this utilization, ranging from its applicability in improving one's writing and composition (Fitria, 2021) to its validity of being recognized as a co-author in a publishable (published) research paper (King & ChatGPT, 2023).

With this, universities around the world are actively grappling with these challenges, and attempting to respond to such challenges by formulating policies to guide AI utilization in research and teaching, as evidenced by Stanford's "Statement on Artificial Intelligence in Higher Education" (2023), MIT's "Responsible Use of Artificial Intelligence at MIT" (2023), and University of Oxford's "Policy on the use of artificial intelligence (AI) in research and teaching" (2023).

As of writing, in the Philippine academic landscape, only the University of the Philippines has attempted to respond institutionally to the challenges posed by AI in the academe through its "Principles for Responsible and Trustworthy Artificial Intelligence" (2023), though such principles have yet to become implementable the policies in its

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university system.

It may be garnered in this rising phenomenon amongst Philippine Higher Education Institutions (HEIs), that there is still a dearth of research surrounding AI-assisted writing and its implications on research in the Philippines. However, the debates and discussions it brings with it are nothing new. All the more, it further heightened the crisis surrounding research integrity due to these advancements in AI that are utilized in the academe, and have urged Philippine HEIs to step up and act in accordance with safeguarding academic integrity in this rapidly growing times of AI dependence.

These issues and ethical considerations are discussed as early as Senior High School (SHS) in the Philippine setting. SHS students take up Media Information Literacy (MIL) with one of its major topics on plagiarism and the ethical issues in information. Though on a more contextual note, the issue surrounding AI-assisted writing (and its possible praxis by students) may better be seen in the actual conduction of research, together with such concepts as research ethics and intellectual honesty, as highlighted in the Department of Education's

curriculum guide for Practical Research (PR) 1 and 2 of Senior High School Students. All three are core courses in the SHS curriculum.

With this, this research provides a preliminary dialogue with the academics and research front liners of Philippine academia by looking into the perception of Practical Research (PR) Teachers on their students' use of AI-writing assistants for their respective research projects and the possible implications of such perception in their attempt to teach research to SHS students. The findings were used to formulate initial policy recommendations that Philippine academic institutions may adopt, especially those that cater to both grassroots and advanced research subjects in their offerings.

Conceptual Framework

The figure below is the proposed paradigm of the study. At the center of the diagram is the phenomenon being studied: the use of AI in research. To its right (Academic Honesty) is the result of the pros of using AI, which is to produce responsibly written research, while to its left (Plagiarism) is the result of the cons of using AI, which is to produce AI-generated research.

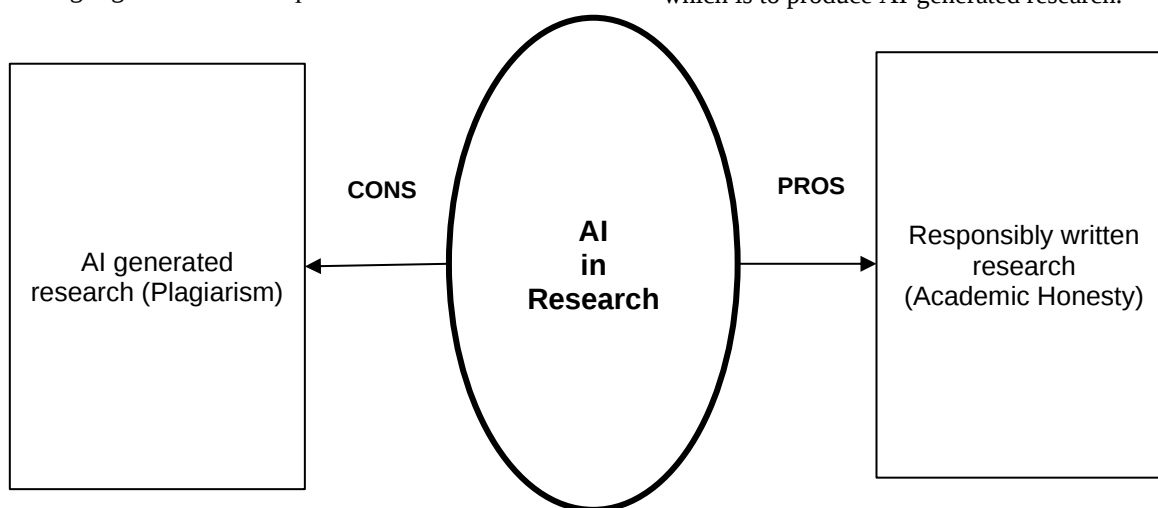


Figure 1: Research Paradigm

Statement of the Problem

The main focus of the study is to explain the possible effects of the students' use of AI in writing their research through the lens of the PR teachers.

Central Question

What insights and policy recommendations may be derived based on the experiences of the PR teachers on the students' use of AI writing assistants?

Probing Questions

- How are plagiarism and academic honesty taught in PR?

- What are the pros and cons of using AI in research?
- Is the use of AI in writing research papers beneficial or detrimental?
- Would the use of AI writing assistants be recommended to students?

Scope and Delimitation

This research looked into PR teachers' perception of the students' use of AI-writing assistants. As such, the paper only attempted to sketch the general reception of the issue of AI-writing assistants and its possible implications in teaching research to SHS students. The respondents of this research were

limited to the Practical Research 1 and Practical Research 2 teachers of the Basic Education Department in a higher academic institution in Bulacan for the academic year 2022-2023.

Methodology

Research Design

This study utilized a qualitative research method, specifically the phenomenological approach. A phenomenological study describes the common interpretation of multiple individuals of their lived experience of a concept or a phenomenon, according to Creswell (2013). Through the conduct of a semi-structured interview, the PR teachers' perception through their experience in their research class explained the effect of the use of AI in the actual research output of the students.

Participants/Respondents of the Study

All the PR teachers for AY 2022-2023 in the SHS program of a Basic Education Department in one private higher education institution in Bulacan were the study participants. There are 2 PR1 teachers and 4 PR2 teachers.

Instrument of the Study

The researchers prepared an interview guide to gather the data. The questions included were subjected to experts' evaluation to ensure their validity.

Data Gathering Procedure

After securing the clearance from the REC, the researchers scheduled a one-on-one meeting with the PR teachers to conduct the interview. The interview was recorded and transcribed verbatim for analysis.

Data Analysis and Statistical Treatment

After the interview transcription, the data were analyzed using the Colaizzi Method. The Meaning units and condensed meaning units were identified. The sub-themes and themes were derived afterward. The themes served as the main concepts in writing the policy recommendations on the responsible use of AI in schools.

Ethical Considerations

In this study, the researchers submitted the approved research proposal to the Research Ethics Committee to verify the ethical compliance of the study before the data gathering. The researchers also ensured that

the following ethical considerations were followed during the study:

1. The respondents' well-being was ensured, and they were not placed in any form of harm.
2. The respondents were informed they would not be forced, coerced, or put in an uncomfortable position in any part of this study's undertaking.

The researcher ensured that the participants were informed of what they would be part of (title of the study, name of the researchers, confidentiality, data collected, among others). Informed consent was secured from them, acknowledging that they have read the purpose and extent of the study they will take part in.

3. The data obtained in this study were considered confidential. All profiling data were deleted for privacy once the study was considered done.

Results and Discussion

The researcher used Creswell's (2007) organized method to study qualitative data. The method started with thoroughly transcribing the key informants' interviews, followed by an open coding procedure to determine the categories and condensed meaning units. The codes produced and the information acquired during the interview were constantly compared. The information was then moved to axial coding for every key informant. This method was utilized to elicit the key informants' perceptions of the effects of the students' use of artificial intelligence in research. The themes derived from the analysis of the responses of the key informants served as insights that led to the formulation of policy recommendations to be proposed by the researchers to the unit of analysis.

Interviews with Key Informants. All six key informants were asked to sign a consent form for the interview. Appointments were made, and the interviews were conducted and audio recorded for transcription.

Analysis of the Interview. Meaning and condensed meaning units were formulated and categorized into codes to surface the essence through emergent themes, labeled carefully and accurately as possible to preserve the meaning of the described phenomenon following Colaizzi's method. Table 1 summarizes the analysis made on the interview with the key informants.

Table 1: Summary of Themes Derived from the Meaning Unit, Condensed Meaning Unit, and Subthemes that Surfaced from the Interview with Key Informants

Emerging Theme 1: On teaching about plagiarism and academic honesty in class

Meaning Units	Condensed Meaning Units	Sub-themes	Theme
<i>"...we remind our students to be honest at all times. We also remind them that we are using plagiarism checkers to check their work."</i>	With the use of plagiarism checkers, students are reminded to be honest always	Honesty through the use of plagiarism checker	Plagiarism and Academic Honesty must be taught as a concept in Practical Research
<i>"...there are 1-2 person/s in each group that is assigned to proofread their papers before submission."</i>	Proofreading helps in ensuring the quality of the paper and in avoiding plagiarism	Avoiding Plagiarism through proofreading	
<i>"...provide alternatives to copy and pasting, such as teaching them how to paraphrase and cite properly."</i>	Paraphrasing as an alternative to copying and pasting	Use of paraphrasing	
<i>"I teach them the existing types of plagiarism which most of them are not aware of and let them know the ways to avoid it."</i>	Plagiarism may be avoided by heightening the awareness of students on the types	Avoiding Plagiarism through awareness	
<i>"...every information that came from another author's idea must be given the proper credit by mentioning them in the paper being made."</i>	Plagiarism and Academic Dishonesty may be avoided through proper citation	Citations to credit others' ideas	
<i>"I try to give relatable situations and examples the students can relate to for them to know and understand how plagiarism is being done."</i>	Use of relatable situations and examples for a better understanding of the concept of plagiarism	Understanding plagiarism through situations and examples	

Emerging Theme 2: On the pros and cons of students using AI-writing assistants in Research

Meaning Units	Condensed Meaning Units	Sub-themes	Theme
<i>"AI helps the students to find research easier since it is giving all the information...It could be of help for them to have the overview and the expectations in their research."</i>	Students' utilization of AI makes information and resources related to their research more accessible.	The use of AI can make information easily accessible but may also be a source of misinformation and hypervigilance/distrust on the part of the teachers regarding their students' outputs	The pros and cons of using AI-writing assistants need to be identified to ensure that the cons will not overweigh the pros
<i>"It is easier for them to construct and put on different contents from various sources to create a research."</i>			
<i>"It helps the students to find research easier. It helps them to foresee their research."</i>			
<i>"Maybe it could help them think of a better topic."</i>			

<i>"Since AI should be prompted properly, this would be hard for students to get accurate results, especially if they do not have a good command of the English language."</i>	AI may be a source of misinformation if not used/prompted properly		
<i>It would foster distrust, especially on the part of the checkers/peer reviewers</i>	Using AI may instill hypervigilance/ distrust of teachers on their students' outputs		
<i>"Students' paraphrased version with the help of AI is actually obvious since the level of words being suggested to them is not the same with their vocabulary levels sometimes"</i>			
<i>"it also has its limitations since it's not giving the related literature of the study they are to conduct."</i>			
<i>"It is favorable for the students since they will be more familiar on how to paraphrase their statements...[and] it assists them in all aspects in writing."</i>	AI aids students in paraphrasing, checking for grammatical errors and plagiarism, and improving their academic writing	AI can make life easy for students in writing research and ensuring their work is free from plagiarism and grammatical errors. However, students may become over-reliant, and it may deter their critical thinking skills	
<i>If this would be used responsibly, it may help students to be more careful in writing.</i>			
<i>It gives them an idea of how to paraphrase their statements. They suggest words or phrases that are fit for the paper.</i>			
<i>...[using AI-writing assistants is] beneficial in improving well-versed sentences and paragraphs, connecting ideas or contradicting definitions, constructing a concrete context to give importance to a certain matter, AI-writing assistants can also build the confidence of students/writers..."</i>			
<i>It is helpful in ensuring the quality of submission in terms of using it to check the grammar, plagiarism, and citations.</i>			
<i>"The use of AI for generating outputs is already questionable... Aside from the unethical side of AI use, I could see over-reliance from [the] AI as a possible problem especially when students will use it for their research."</i>	Students may become over-reliant on AI in doing research, which may lead them to practice laziness and academic dishonesty		
<i>"It hinders the students to work on their own. It leads the students to just rely on their work in AI applications."</i>			
<i>Students can be reliant on it and it may also be used to plagiarize content.</i>			
<i>"...students being too dependent on relying on such applications leads to laziness and academic dishonesty..."</i>			

<i>"Over-reliance on AI... Promotes laziness"</i>			
<i>"Students would stop thinking critically if they'd know these existing AI assistants."</i>	AI may deter the critical thinking skills of students and their ability to apply what they learned in class		
<i>"...relying on [AI] too much may become a factor in producing students who lack critical thinking skills...AI writing assistant is not favorable for students in this case as they cannot apply what they learned through the lessons that they have in the class."</i>			
<i>"...it can also lead to a decline in students' intelligence, comprehension, as well as their self-efficacy in completing and doing work on their own."</i>			

Emerging Theme 3: On recommending the use of AI-writing assistants to students

Meaning Units	Condensed Meaning Units	Sub-themes	Theme
“No. It would just make them lazier.	Utilizing AI may make students lazier	Teachers need to ensure that the use of AI will not make students lazier	AI may be recommended to students with caution to check for possible plagiarism and to assist brainstorming/prompting in academic writing
“Yes. If they will be able to do it accordingly.”	Using AI responsibly	The use of AI in research may be recommended to students with reservations/limitations	
I recommend the use of AI Writing Assistant if the statement that they want to paraphrase is really hard to paraphrase... I'd rather recommend the use of a Plagiarism Checker than the use of an AI-writing assistant.	AI may be used to check plagiarism and not to encourage plagiarism		
Yes, but it should only be limited in checking their papers and not in a way that they will use it to copy and paste every information that they have on the platform.			
Somehow yes. Seeing as students are already dependent on AI writing tools, it will be harder for them to write without it. Thus, I will encourage students to use the said application for assistance only to give them ideas on the necessary ideas and proper construction and writing of research and/or other activities.			
I would only allow my students to use AI for their initial process. Afterward, I will be strict especially in checking if their work is plagiarized/AI generated			

Emerging Theme 4: On whether the use of AI-writing assistants is more beneficial or detrimental to the students in writing their research papers

Meaning Units	Condensed Meaning Units	Sub-themes	Theme
<i>"It could be beneficial if the students are using those in helping them to foresee their research but the bigger part is that it's detrimental since students will not be able to start their research on their own."</i>	AI is beneficial to foresee their research and detrimental because of originality and authenticity issues	Foresight vs originality and authenticity	The use of AI-writing assistants may both be beneficial and detrimental, and so mechanisms must be in place to ensure proper implementation
<i>"AI-writing assistants can be both beneficial and detrimental to the students in writing research papers as it can construct ideas well and can also plagiarize other people's work."</i>	AI helps construct ideas but may also plagiarize other's works	Idea generation vs plagiarism	
<i>"It is more detrimental because they would be dependent on it and probably would stop them from generating their own ideas."</i>	Students may over-depend on AI	Overdependence on AI	
<i>"It is beneficial for them since the words or phrase being suggested is well-written."</i>	The quality of student work will improve	Use of AI may result in better student work	
<i>"No, especially if the aim is to foster the development of their writing skills."</i>	Students' writing skills will be at risk	Use of AI may lead to poor writing skills	
<i>"Detrimental because of the aforementioned problems: Questionable sources from the AI's databank, the ethical implications of AI use, and the Over-reliance on AI when it comes to providing quality outputs."</i>	AI's questionable sources, ethical implications of usage, and over-reliance	AI may bring problems on sources, ethics, and over-reliance	

Eidetic Model of Using AI-writing Assistants in Research

The analysis resulted in four themes which represent the four pillars of the effective use of AI-writing assistants in research as follows: (1) Plagiarism and Academic Honesty must be taught as a concept in Practical Research, (2) The pros and cons of using AI-writing assistants need to be identified to ensure that the cons will not outweigh the pros, (3) AI may

be recommended to students to check for possible plagiarism and to assist brainstorming/prompting in academic writing. However, this must be done with caution, (4) The use of AI-writing assistants may both be beneficial and detrimental, and so mechanisms must be in place to ensure proper implementation. These pillars will serve as the key strategies in crafting the policy recommendations.

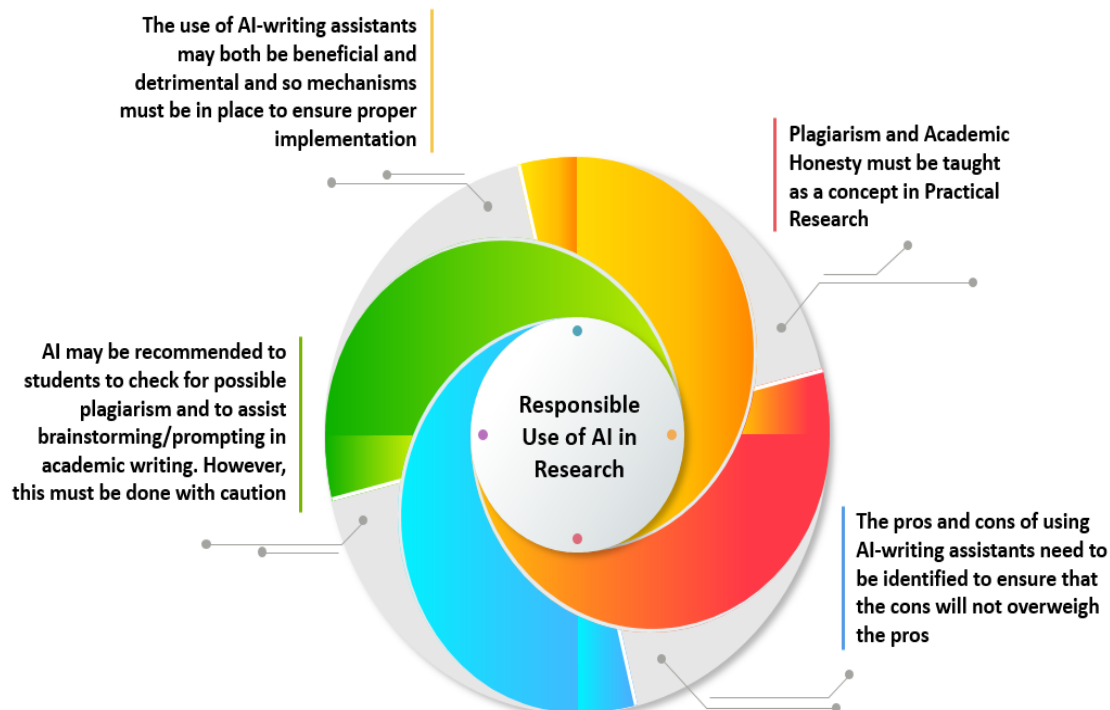


Figure 2: The Eidetic Model of Using AI in Research (Santos & Cruz, 2023)

Proposed Policy Recommendations Based on the Study Findings

To ensure that schools, especially those that offer research as a subject, maintain academic honesty despite the emergence of AI writing assistants, the following recommendations that may be considered for policy formulation/reformulation are hereby recommended. The recommendations are divided into three categories: (1) pedagogical, (2) governance, and (3) operational, as adopted from the research of Chan (2023) titled “A comprehensive AI policy education framework for university teaching and learning”.

Pedagogical

1. The research curriculum may include competencies such as
 - knowledge of plagiarism and academic honesty,
 - skills in using plagiarism checkers and AI writing assistants,
 - values on the proper and responsible use of AI
2. An information drive may be conducted to heighten students’ awareness of AI writing assistants and their responsible use. These information drives, although general in nature, may also be tailored according to each course/strand, as the utilization of AI varies among different industries and disciplines, even in the field of research.
3. PR teachers may incorporate the use of AI writing assistants in their classes. They may use AI-generated information as prompts or

preliminary foundations in their students’ attempts to craft their respective research projects. As such, these may become first-hand examples for students on how to use AI in research responsibly.

Governance

1. Turnitin or any other plagiarism checker may be availed by the school and incorporated in their LMS to ensure that plagiarism in all submissions is checked/monitored. The management may determine a certain acceptable threshold on the percentage of detectable AI-generated content and revisions of the accepted plagiarism percentage, incorporating these additional considerations on AI.
2. The Data Privacy Office, in coordination with the Research Office, may develop data privacy and security policies surrounding the utilization of AI in research as an added clause in the ethical considerations and data collection process of research proposals.
3. A blanket policy on the responsible use of AI in Research may be administered among all Research subjects and subjects that incorporate research and/or academic papers in their deliverables, not only at the Senior High School level but also at the High School level.

Operational

1. A consultation meeting may be conducted with all stakeholders so that their input may be incorporated into the crafting/revising of the

policies. As the degree of utilization of AI differs with every field, professors and industry practitioners of every department/strand may be included in the consultation process.

2. Training may be planned and conducted for all staff involved in implementing the new policies to be crafted. This training can be repeated annually to orient/involve the new staff. The training covers the responsible use of AI in class, ways to detect plagiarism, and the countermeasures that may be taken to avoid such situations.
3. Policies that may be implemented on the level of the Basic Education Department may also be implemented for teachers and staff who engage in scholarly work. As such, teachers may become living examples to their students on responsibly and efficiently utilizing AI in their research projects.

Conclusion

Based on the study's findings, the following conclusions were derived:

1. Plagiarism and Academic Honesty are taught as a separate concept or topic in Practical Research classes. Constant reminders are also given to students whenever they are asked to make some submissions on what are the things that need to be considered, most especially on avoiding plagiarism to maintain academic honesty. Teachers also employ preventive strategies, such as making the students aware of the existing types of plagiarism and how to avoid committing them, teaching them how to paraphrase, and showing them how to employ proper citations in their works.
2. The pros and cons of using AI writing assistants must be identified to ensure that the cons will not outweigh the pros. It was observed that the PR teachers had mixed sentiments on using AI-writing assistants in research. However, all of them were aware of both the beneficial and detrimental effects that it may put forth, such as it being an accessible source of information but also of misinformation. It is a helpful tool in assisting researchers as a grammar and anti-plagiarism checker but may also foster overreliance on the users. Although no student admitted using AI to write their paper, the PR teachers were very honest in saying that they find it difficult to verify whether AI writes the submissions they are getting.
3. Based on the sentiments of the PR teachers, the use of AI-writing assistants may both be beneficial and detrimental. As such, mechanisms must be in place to ensure proper implementation of it in the classroom. Questions arose regarding the differentiation between AI being a medium for foresight vs. the skepticism behind the originality and

authenticity of a research topic, between it being a prompt for idea generation and a tempting avenue for plagiarism and between the improvement of the student's quality of work and the possible fostering of overreliance in utilizing these AI-writing assistants. Concerns were also raised about its ethical use as a technical tool and a prompt in class discussions and activities. The ethical considerations and dilemmas surrounding the use of AI are very much evident in the responses of the Practical Research teachers. We see no lack in their awareness of the beneficial and detrimental effects of such use.

4. Most PR teachers would recommend using AI writing assistants for their students, but all with reservations. Most of the PR teachers agree that AI may be recommended to their students with caution – AI being used only to check for possible grammatical errors and plagiarism in their works and being utilized to assist as a prompter in the brainstorming process of the students.

Recommendations

Based on the conclusions that were derived from the findings, the following are hereby recommended:

1. It is possible that teaching Plagiarism and Academic Honesty in Practical Research may be seen as preventive measures, but a more in-depth discussion on Research Ethics may prove to be more beneficial in fostering academic integrity in the students as early as Senior High School.
2. Teachers still face certain difficulties when it comes to detecting AI-generated content in their students' works, despite the presence of plagiarism checkers. Aside from depending on these plagiarism checkers, teachers may also undergo training on possible methods and techniques that they may utilize in efficiently reading and analyzing their students' works.
3. Based on the sentiments of the Practical Research teachers, we see how there is no lack of awareness of how ambivalent the use of AI may be in the field of research. Integrating such awareness into praxis is a greater challenge. The possible implementation of these policies and the rationale behind said implementation must be understood and abided by all the institution's stakeholders, all the way from the top management to the students.
4. Since this study is limited to the perception of Practical Research teachers, a wider scope concerning the topic at hand may be pursued. Exploring the perceptions of research teachers from the undergraduate and graduate levels may further enrich the possible policies to be crafted in the utilization of AI-writing assistants in the academe.

Conflict of Interest

There is no conflict of interest by the authors in this manuscript.

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