Nurturing Responsible AI Practices in L2 Writing: Empowering Student Voices

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Abstract

In this study, I explored the responsible and ethical integration of Artificial Intelligence (AI) in academic settings within three sections of a freshman academic writing course at an English-medium American university in the United Arab Emirates (UAE). My primary objective was to assess the impact of educational interventions on enhancing digital literacy and fostering learner autonomy for responsible AI use. Employing an exploratory action research design, I utilized a mixed methods approach, combining qualitative and quantitative data. Key data sources included collaborative writing assignments, which involved a contrastive analysis of human versus AI-generated texts, as well as the development of class policies through collective student input, alongside survey responses. The findings underscore the crucial role of educational interventions in cultivating digital literacy amidst the rapidly evolving landscape of technological advancements. Moreover, they emphasize the significance of active student involvement in crafting comprehensive class policies and guidelines tailored to their needs.

Key words: Second language *(*L2) writing, digital literacy, generative AI, AI literacy, AI policy development, academic integrity, learner autonomy

Introduction

Cultivating a culture of academic integrity in today's AI-driven landscape necessitates a reevaluation of existing university policies on AI usage. While the rapid evolution of large language models (LLMs) like ChatGPT presents complex challenges, the need for comprehensive and nuanced guidelines is undeniable (Chan, 2023). This is especially true considering the longstanding difficulty in defining plagiarism itself, as highlighted by Pecorari (2022): "defining plagiarism in a way that is both robust and defensible is entirely feasible; the difficulty lies in defining it in terms that can readily be applied in practice" (p. 363). This ambiguity leads to discrepancies even among experienced writers regarding appropriate and inappropriate borrowing.

The introduction of LLMs further complicates the picture, creating a new set of ethical considerations for responsible AI use, necessitating a reevaluation and expansion of the traditional definition of plagiarism (Hartwell & Aull, 2021). Students, lacking a clear understanding of these implications and best practices, might inadvertently engage in unethical behavior. This calls for an urgent investigation into their perceptions, understanding, and adherence to responsible AI usage within the academic community. Only through such comprehensive understanding can we establish effective policies that foster a culture of academic integrity in the age of AI.

In this exploratory action research study, my aim was to evaluate the effectiveness of an educational intervention in enhancing digital literacy among undergraduates enrolled in required Academic Writing classes at an English-medium American university in the UAE. The intervention involved collaborative writing tasks conducted during class sessions, which included a contrastive analysis between human and AI-generated content, as well as the development of AI class policies. Another research objective was to uncover the role of active student engagement in policy development in nurturing digital literacy and fostering students' willingness to follow the recommended guidelines.

To address these objectives, I posed the following research questions:

1. To what extent do educational interventions in a freshman academic writing course, specifically employing a contrastive analysis of AI versus human-generated content, contribute to improving students' digital literacy?
2. How does students' involvement in crafting AI class policies contribute to fostering their digital literacy and cultivating learner autonomy for responsible AI use?

Literature Review

Navigating the AI Revolution: Ethical Considerations and Digital Literacy

The rapid advancement of AI without a clear roadmap or opportunities for critical analysis has sparked concerns about ethical implications, potential biases, and unintended consequences not only among academicians but also AI industry leaders (Giannini, 2023; Future of Life Institute, 2023). "AI revolution" or "paradigm shift" have become common terms to depict the profound transformation in education particularly since the introduction of LLMs in late 2022 (Meyer et al., 2023; Levit & Grubaugh, 2023). LLMs are neural networks trained using data input/output sets, often employing self-supervised or semi-supervised learning techniques. These models analyze information and predict subsequent words in a given input, leveraging extensive datasets and substantial internet-based resources. A notable attribute of LLMs is their "iterative chat" capability, enabling text generation that is often indistinguishable from human writing by refining subsequent outputs based on prior responses (Meyer et al., 2023) While the emergence of LLM-based chatbots holds promise for fostering innovative teaching methodologies and facilitating learning, it is imperative to address the ethical concerns regarding their equitable usage and inherent biases.

The magnitude of transformation described above has led some researchers to conceptualize our current state as "post-digital," where “digital” pervades every aspect of life, rendering nothing considered "normal" without a digital component (de Laat & Bonderup, 2019). Digital Literacy (DL) is a crucial concept underpinning this study, yet its definition remains elusive due to its multifaceted nature. However, it is widely recognized as a critical competence for empowering citizenship in an increasingly digital world (Marín & Castañeda, 2023). Situated literacies, and multiliteracies, as well as ideological models of literacy (Street, 2001) offer valuable frameworks

for understanding DL. Situated literacies, emerging from the field of New Literacy Studies (Barton, Hamilton, & Ivanič, 2000), emphasize that all uses of language can be seen as located in particular times and places, and that all literate activity is indicative of broader social practices. The notion of multiliteracies (Street, 2001), on the other hand, refers to a variety of literacies existing within diverse contexts, such as media literacy, computer literacy, academic literacy, and digital literacy. Building upon these frameworks, Marín and Castañeda (2023) define DL as a set of integrated skills and practices (conceptual, attitudinal, procedural, and ethical) empowering individuals and groups to participate effectively in society. Notably, they highlight a research gap regarding pedagogical strategies to develop DL within higher education, which I aim to address in this study by exploring AI literacy, a concept closely related to DL. As Warschauer et al. (2023) suggest in the context of language learning, AI literacy can be seen as "a critical aspect of literacy skills" (p. 2) essential for navigating and integrating AI technologies into writing tasks.

Elaborating on this concept, Darvin and Hafner (2022) note the inherent complexity of defining "critical" digital literacies due to its multifaceted nature as a social practice shaped by context and power dynamics. While curricula often prioritize specific skills or technology use, teachers navigate institutional constraints and their own digital dispositions when integrating digital literacy into language learning, highlighting the diverse priorities held by various stakeholders.

LLMs and L2 Writing: Affordances, Limitations, and Pedagogical Considerations

The integration of ChatGPT and other AI tools based on LLMs in educational settings presents both opportunities and significant challenges. In the field of L2 writing, Warschauer et al. (2023) identify three key contradictions. The first contradiction, "imitation," highlights the paradoxical role of imitation in language learning. For instance, while L2 learners benefit from emulating target writing conventions in writing samples provided, imitating too closely can lead to serious consequences like plagiarism, particularly in high-stakes academic contexts. AI writing tools offer tempting affordances, but they also heighten plagiarism risks due to their indistinguishably fluent output. This risk disproportionately affects L2 writers, whose developing skills naturally stand out against AI's polished prose, making them more susceptible to accusations (Liang et al., 2023). In a cruel irony, even exceptional L2 writing may raise suspicion due to its unexpected quality. Although AI detectors may seem like a solution for instructors, they are unreliable (Stokel-Walker & Van Noorden, 2023) and unfairly target L2 writers, incorrectly labeling their work as AI-generated over 50% of the time (Liang et al., 2023).

The second contradiction, Warschauer et al. (2023) call "the rich get richer," highlights how AI tools exacerbate existing inequalities in language learning. While AI-generated writing seems like a democratic tool offering global access to fluent English, it requires privileges like digital devices and internet access, potentially widening the "language divide" for those lacking such resources.

The third contradiction, "with or without," underscores the paradox of AI writing for L2 learners: while effective use of AI tools demands strong existing writing skills, premature exposure can impede the development of these foundations (Warschauer et al., 2023). Moreover, while advanced L2 learners derive greater benefits from AI tools, using them to craft better prompts, revisions, and AI-integrated writing, lower proficiency learners may face challenges in providing effective prompts, editing AI output, or avoiding overreliance on AI, potentially exacerbating the achievement gap.

Underlying all these three contradictions, “the school-work contradiction” can be experienced as learners transition from classrooms where AI tool use is prohibited and penalized to workplaces where it's encouraged and expected (Gurchiek, 2023, as cited in Warschauer et al., 2023). L2 writers accused of academic dishonesty for using AI tools in class may face disadvantages in the workforce if they lack proficiency, as efficiency and productivity are valued over authenticity.

Addressing these complexities necessitates nuanced pedagogical approaches that cultivate both AI literacy and the ability for L2 learners to leverage these tools effectively. As students inevitably encounter tools like ChatGPT and other LLMs, educators face a pressing need to adapt their teaching and assessment methods to navigate this evolving educational landscape effectively.

While students explore the various features of these AI tools, it becomes paramount to educate them about their limitations. For instance, unlike traditional learning resources, LLM chatbots can generate responses that exude an air of authority, akin to "all-knowing oracles" (Giannini, 2023). However, this authoritative tone can be deceptive, as these AI-powered chatbots can sometimes present incorrect information as fact (Thorp, 2023; Stokel-Walker & Van Noorden, 2023), a phenomenon known as "hallucination" (Meyer et al, 2023).

There is also a looming risk of overreliance on LLMs (Kasneci et al., 2023; Meyer et al. 2023), which can manifest in various ways, from academic dishonesty to perpetuating inaccuracies or biases present in AI-generated data, impeding the development of critical thinking skills among students, especially in writing (Thorp, 2023; Stokel-Walker & Van Noorden, 2023; Meyer et al, 2023; Godwin-Jones, 2022; Su et al., 2023). To combat this, educators must instill a sense of ethical responsibility and academic integrity in students when utilizing AI tools like ChatGPT (Hartwell & Aull, 2021; Giannini, 2023). This need is further highlighted in a comprehensive review of 125 studies on AI in language education conducted between 2013 and 2023 (Zhu & Wang, 2024), which emphasized the importance of delving into broader issues such as ethics, policies (Zhang & Aslan, 2021) - areas currently lacking in AI and language education scholarship.

Additionally, in a UNESCO report on Generative AI and the future of education, a broader concern regarding the potential erosion of learners' agency through increased reliance on adaptive AI in

education has been discussed. This trend may lead to diminished opportunities for interpersonal interaction, greater decision-making by machines, and a narrowed focus on easily automatable knowledge domains. Such developments could deprive learners of vital 21st-century skills, including resourcefulness, self-efficacy, self-regulation, metacognition, critical thinking, and independent thought (Miao et al., 2021).

Nevertheless, it is essential to recognize that with proper guidance, students, particularly L2 writers, can harness the potential of LLM-based chatbots in constructive ways that align with the ethical standards of educational institutions (Warschauer et al., 2023). The key here lies in prioritizing understanding how students utilize these AI tools, rather than solely focusing on whether they use them or not.

Building on the research insights previously discussed, through this study, I present a practical example of a pedagogical approach that aims to foster not only digital literacy and learner autonomy but also to enhance critical thinking, interpersonal communication competence, collaboration, audience awareness, and persuasive writing skills.

Context

I carried out this study in Fall 2023 at an English-medium American university in the UAE, renowned for its diverse student body comprising approximately 90 nationalities. The Department of English offers three essential writing courses—WRI 001: Foundations of Academic Writing, WRI 101: Academic Writing I, and WRI 102: Academic Writing II—mandatory for undergraduates, serving as either prerequisites or co-requisites for numerous discipline-specific courses. At the time of the study, I was teaching three sections of WRI 101.

As a researcher committed to advancing the academic literacy of undergraduates and exploring their reactions to emerging challenges, I find it crucial to undertake a comprehensive investigation into my students' initial engagement with AI technology, especially given its widespread availability. Since the public release of large language models such as ChatGPT, my students, like many others around the world, have exhibited a keen interest and curiosity in its application for academic purposes. Despite some students hesitating to openly discuss the topic due to concerns about potential judgment or penalties, this curiosity often led them to test the boundaries of permissible use, even in the face of explicit guidelines prohibiting such utilization. However, as students proposed research topics, particularly focusing on the impact of AI on education, class discussions regarding the responsible and ethical use of AI tools inevitably took center stage. By fostering an environment where students felt at ease expressing their views, I observed increased openness, with many students freely sharing their genuine opinions, sometimes in contrast to the prevailing university guidelines.

The University officially articulated its policy for the first time in Spring 2023, incorporating it as a concise statement in the common syllabus used during the same semester. This policy was integrated into the student academic integrity code section of the syllabus, as quoted below:

"Students MUST read the Student Academic Integrity Code outlined in the Undergraduate Catalog and abide by the standards for academic conduct, students' rights and responsibilities and procedures for handling allegations of academic dishonesty.

All assignment submissions in this course must be original work done by the students themselves. It is a serious violation of the academic integrity code if a student, for example, uses any generative Artificial Intelligence (AI) model like ChatGPT, or any other AI tool, to draft/do the work for them."

The same policy statement was reiterated in Fall 2023, with no additional details provided. Despite the policy established in Spring 2023 and open conversations I had with students regarding the ethical and responsible use of AI in academia, I identified instances of violations, particularly in assignments with fabricated sources. In response to the challenges posed by AI tools and to address related issues, the common syllabus for WRI 101 in Fall 2023 was modified to include the ethical use of AI in critical thinking and reading during weeks 4 and 5 of the course. Consequently, in Fall 2023, it was a priority for me to proactively address this issue by initiating detailed discussions on critical digital literacy and involving students in the creation of a more comprehensive class policy. This approach focused on collaboration rather than resorting to threats of possible consequences and employing a top-down lecturing style.

Following the course syllabus and recognizing the need to address critical digital literacy, I decided to conduct an action research project structured across several distinct phases, which will be explained in detail in the data collection section. Before commencing data collection, in alignment with the WRI 101 common syllabus, I provided instruction on crafting an academic summary, explained the evaluation rubric that will be used to assess their work, assigned the text for summarization, facilitated a class discussion on the assigned text, and covered the fundamentals of APA documentation and format.

Methodology

Following an exploratory classroom-based action research design, I employed a mixed methods approach that integrates qualitative and quantitative data.

Participants

The participants in this study included all 77 freshmen enrolled in the three WRI 101 sections I instructed during the Fall semester of 2023. There was an almost equal distribution of male and

female students (see Table 1). This group comprised a diverse range of academic backgrounds, including students from engineering, management, architecture, and computer science, among others.

Table 1: Distribution of Male and Female Participants Across Sections

	Male	**Female**	**Total**
WRI 101.23	14	13	27
WRI 101.24	13	11	24
WRI 101.34	12	14	26
Total	39	38	77

Data Collection

Three distinct data sources informed this investigation:

1. Student responses to the contrastive analysis questions following a number of class activities carried out throughout three class sessions
2. Collectively created class policies, in the fourth session
3. Quantitative data from an electronic survey, including demographic information and Likert scale questions, administered in the final stage

The class activities designed for the research project were structured across four course sessions, each lasting 75 minutes, outlined as follows. During the final session, I briefed the participants about the survey and invited them to complete it at their convenience within one week.

- Session 1: Individual task
  First, I instructed students to independently craft a summary of an assigned text, a newspaper article on random acts of kindness. They had to adhere to academic writing norms and use APA style for formatting and referencing. Importantly, to prevent any potential use of AI technology, I had them handwrite their summaries during class time.

- Session 2: Collaborative task
  Next, I organized the students into teams of four to six members. Each team then collaboratively revised and consolidated their individual summaries into a comprehensive team summary. Following this, I facilitated a cross-group peer review session using the summary checklists.

- Session 3: Intervention
  In this stage, I instructed students to utilize AI technology, specifically ChatGPT, to generate an alternative summary of the assigned text. Despite the initial shock, given the explicit classroom directive conflicting with university policy, students were intrigued and sought clarification on the purpose behind this instruction. Following this, they received detailed instructions to critically analyze the disparities between the AI-generated summary and their own collaborative efforts, focusing on elements such as word choice, style, coherence, relevance, and adherence to academic writing conventions (see Appendix A). Subsequently, students reported their reflections on this contrastive analysis within the broader context of using AI tools for academic writing assignments.

- Session 4: Development of a collaborative class policy
  The final phase of the research involved the collective development of a class policy by the student groups, which aimed to establish guidelines for the responsible, ethical, and appropriate use of AI within an academic environment. I asked the students to create this class policy based on what they learned from the contrastive analysis assignment and their following discussions on ethical, responsible, and effective use of AI tools for academic purposes (see Appendix B). Students collectively crafted 16 class policies—6 in section 23, 5 in section 24, and 5 in section 34. In each section, students presented and shared their policies with classmates, which were remarkably similar in content. To determine the official binding document, a vote was conducted in each class to identify the most comprehensive and well-written policy.

- Session 5: Survey
  Once students completed the class policy document, I invited them to participate in a survey. The survey, comprising eight questions, sought to gather insights into the impact of the contrastive analysis and the creation of the class policy on their understanding of effective, responsible, and ethical AI use for academic purposes (refer to Appendix C: Survey). Before distribution, the survey underwent a pilot phase to ensure its effectiveness.

  I shared the survey link electronically with the students, giving them a one-week timeframe for completion beyond regular class hours. This procedural arrangement aimed to elicit candid responses; a condition potentially inhibited in the immediate presence of the professor. Out of the 77 participants, 71 completed the survey, providing valuable feedback for the overall assessment of the course's impact. The students' responses to the survey questions complemented their written reflections in the contrastive analysis and the class policies they collaboratively developed.

Data Analysis

Through a rigorous content analysis of the qualitative data from the contrastive analysis reports and class policies, I identified salient themes that offered in-depth insights into the students' perspectives, comprehension, and contemplations regarding the responsible use of AI.

There are various data analysis strategies used in qualitative research; however, the overall data analysis process can be conceptualized in three steps: preparing and organizing the data for analysis, reducing the data into themes through coding and condensing the codes, and finally representing the data in figures, tables, or discussion (Creswell, 2007). I prepared the data for analysis first by reading the contrastive analysis reports and class policies of all the groups several times and noting down the topics that emerged from the data. I made a list of the topics, assigning a name and a code to each. Subsequently, I revisited the documents to establish categories within each identified topic. The following step involved extracting relevant quotes for each category and determining the frequency of mentions for each theme in the documents.

The tables displaying the outcome of this thorough content analysis process are presented in the findings section, addressing research questions 1 and 2.

In analyzing quantitative data from the survey, I utilized Qualtrics, a well-known online platform offering robust features for both data collection and analysis. The results of this analysis, presented in the findings section, primarily address research question 2.

Findings

Research Question 1: Findings from Contrastive Analysis Reports

The data source for the initial research question, examining the effect of educational interventions (specifically, contrasting human versus AI-generated texts) on enhancing students' digital literacy, consists of the contrastive analysis reports generated by student groups during Session 3: Intervention (see Appendix A).

The examination of these reports, 16 in total, revealed that students identified deviations from assignment guidelines in the summaries generated by ChatGPT, recognized strengths of AI in word choice and mechanics, emphasized the importance of human intervention—highlighting the need for repeated prompts for specific goals and the essential role of human verification—and explored implications for social, cognitive, and ethical development. The following table displays the topics, codes, and categories identified as a result of the rigorous content analysis process explained in the data analysis section above.

Table 2: Topics, Codes, and Categories Identified in Contrastive Analysis Reports

Topics	Codes	Categories
Deviations from assignment guidelines	D	1. Content
		2. Organization
		3. Format
		4. Style
		5. Word count
Strengths of AI	S	1. Word choice
		2. Mechanics
Human intervention	HI	1. Repeated prompts for specific goals
		2. Verification
Implications	I	1. Ethical
		2. Social
		3. Cognitive

Deviations from Assignment Guidelines

Upon analyzing the outputs of the ChatGPT-generated summaries and the collaborative summaries they authored in groups, the students observed significant disparities. None of the student groups considered the ChatGPT-generated version superior for the purposes of the assignment, citing various issues encountered during the analysis. The main issue was deviations from the specific assignment guidelines in content, organization, format, style, and word count expectation. Table 3 illustrates the salient themes, provides excerpts from student reports that highlight each theme, and indicates the number of mentions of each theme in the data.

Table 3: Deviations from Assignment Guidelines

Theme	Example (excerpts from student reports)	Number of mentions
1. Content	*[. . .] the AI summary added unnecessary facts that were not included in the original article we summarized, such as: "These acts not only boost the mood and well-being of the giver but also trigger a release of oxytocin, the "love hormone," in both parties involved". There is no mention of oxytocin or love hormone in the article we were asked to summarize, we were surprised why AI included this detail in the summary.*	16
2. Organization	*The ChatGPT summary started with the short story the author used to introduce the topic instead of stating the main idea. Some words were repeated a lot, like "the article".*	13
3. Format	*The AI summary lacks the appropriate format and style for an APA summary.*	15
4. Style	*Moreover, it had a non-academic or informal structure and diction. An error that is worth mentioning is that the AI generated summary includes the pronoun 'you' [. . .] The professor asked us to use third person only, and that using second person pronouns would make our summary informal.*	12
5. Word count	*Even though instructions were given, ChatGPT gave us a summary that exceeds the required word count.*	15

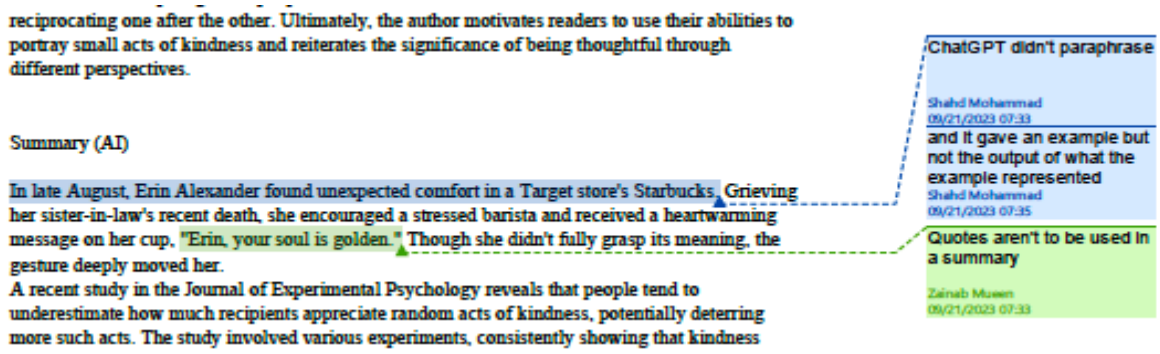
The AI-generated summaries included specific examples and details as well as quotes, deviating from the specific assignment guidelines that emphasized a concise and focused approach. To illustrate, one group stated:

> *"AI includes a lot of specific references to the article such as names of researchers interviewed, journal titles cited, research findings with percentages. It also ignores the rules of writing a summary; for instance, AI uses a quote in their version, "Erin, your heart*

is golden!". We are asked to avoid quotes in summary writing and put ideas in our own words."

The following excerpt is from the contrastive analysis conducted by this student group and their notes on the summary provided by ChatGPT:

Image 1: An Excerpt from a Contrastive Analysis Conducted by a Student Group



Another deviation from the assignment guidelines identified by many groups was the use of second person pronouns in the AI-generated summary. One group noted:

"An error that is worth mentioning is that the AI generated summary includes the pronoun 'you' which is a 2nd person point of view in the conclusion to involve the readers in the idea of the summary. The professor asked us to use third person only, and that using second person pronouns would make our summary informal."

Furthermore, much to their astonishment, students identified instances where ChatGPT fabricated details absent from the original text, potentially distorting the intended meaning and context. To illustrate, one group pointed out:

"In addition, the AI summary added unnecessary facts that were not included in the original article we summarized, such as: 'These acts not only boost the mood and well-being of the giver but also trigger a release of oxytocin, the 'love hormone,' in both parties involved.' There is no mention of oxytocin or love hormone in the article we were asked to summarize; we were surprised when we noticed AI included this detail in the summary."

The students also noted that the ChatGPT summaries lacked an introductory statement featuring the title, author, and main idea, opting instead to commence with an anecdote employed as an attention-grabbing device within the article.

"The summary that we worked on is preferable for academic purposes. The summary that

> *ChatGPT created is simply a paraphrased version of the original article. The grading rubric and our summary checklist include points for the opening statement of our summary, where we should write the title of the article, author's name, and main idea. The AI summary does not start with a sentence like that."*

Interestingly, certain student groups within the same class section identified instances where the ChatGPT produced identical summaries, raising concerns about potential plagiarism issues if the AI-generated content had been submitted without appropriate modifications. To illustrate, one group stated:

> "*2 of our members asked ChatGPT to summarize this article with 2 different instructions, and it ended up giving us the same summary. This shows that if we were to submit this assignment both members would instantly fail due to the match of both summaries."*

Despite the prescribed 200-word limit, the summaries generated by ChatGPT disregarded this constraint, even after students reiterated their instructions, indicating a lack of adherence to the specified requirements. Here are some student comments indicating this issue:

> *"The AI summary failed to follow the given word count generating 300 words rather than the instructed 200."*

Students also noted that ChatGPT disregarded some important key ideas that should have been included in the summary:

> *"Some information that ChatGPT had failed to incorporate was the reasons behind individuals refraining from performing kind gestures. The AI doesn't include anything about the feelings of the receiver or giver. It also doesn't mention how much people tend to stress and overthink while trying to be kind or give back."*

Strengths

However, students acknowledged that ChatGPT demonstrated proficiency in word choice and mechanics, suggesting its potential utility in refining and enhancing their own writing through editing processes. The table below illustrates the salient themes, provides excerpts from student reports that highlight each theme, and indicates the number of mentions of each theme in the data.

Table 4: Identified Strengths

Theme	Example (excerpts from student reports)	Number of mentions
1. Word choice	*Overall, it is evident that ChatGPT uses vocabulary that articulates the message that is trying to be conveyed much more effectively.*	14
2. Mechanics	*The AI-generated article was easier to follow and had utilized better sentence structures and grammatical conventions than our group summary.*	13

While acknowledging the beneficial features of ChatGPT's language capabilities, the students unanimously determined that the AI-generated summary deviated from the specified guidelines for the assigned task, as outlined in class discussions, and would have received a lower score based on the evaluation rubric used for assessing their work. This divergence was particularly noticeable in terms of conciseness, organization of ideas, the opening statement, accurate representation of key points, and adherence to APA format and documentation guidelines.

Human Intervention

I identified another salient theme from the data regarding the role of human intervention. The thematic analysis, as displayed in Table 5, highlighted two key patterns in students' contrastive analysis reports: the need for repeated prompts for specific goals and the essential role of human verification after receiving responses from ChatGPT. These findings underscore the nuanced interplay between automated assistance and human oversight in generating coherent and contextually appropriate academic content.

Table 5: Human Intervention

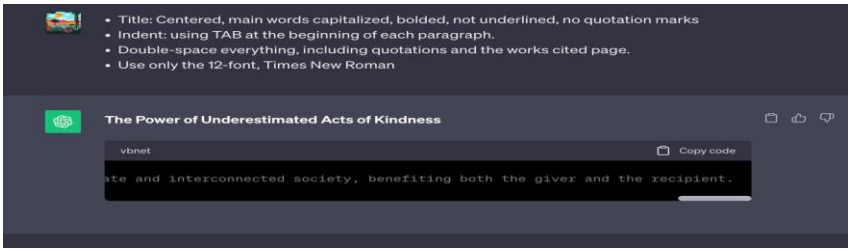
Theme	Example (excerpts from student reports)	Number of mentions
1. Repeated prompts for specific goals	*We gave more specific instructions to make the result more similar to what we need. With the examples provided below, you could observe the difference between each instruction and its summary below and how it affected its word usage and structure…*	16

2. Verification	*After receiving the response from ChatGPT, human intervention is needed to proofread the output to make sure it makes sense and no unnecessary information is provided.*	14

One group was taken aback by their interaction with ChatGPT and its ability to modify the summary after each instruction. Their surprise peaked when ChatGPT offered a code to meet the format requirements. The following excerpt is from their contrastive analysis and includes the screenshot they provided. They noted:

> *"With the examples provided below you could observe the difference between each instruction we gave and its summary below and how it affected its word usage and structure to the point where when I put the instruction to provide a certain format, it gave me a code that I could easily copy onto word and have it according to the professor's preference."*

Image 2: Screenshot Provided by a Student Group as Evidence for their Interactions with ChatGPT



However, many student groups agreed: "Human intervention is necessary. Although the words used may be advanced and academically correct, the overall structure of the writing is lacking, and requires a lot of reshaping to be considered a good academic piece."

Another group underscored the significance of verification in their observations:

> *"No matter how clear the instructions given to the AI are, it will never produce what is exactly desired and therefore human refinement is required as no one knows the desired output more than the human who requested that output. An example of this can be seen in this summary experiment as the AI went over the 200 word limit even though it was instructed not to do so, proving human intervention is required to further refine the use of AI."*

Implications

Another prominent theme I identified in the contrastive analysis reports revolves around the implications drawn by students from their ChatGPT experiment. The table below outlines these implications, spanning ethical, social, and cognitive dimensions, with excerpts derived from students' reports.

Table 6: Implications

Theme	Example (excerpts from student reports)	Number of mentions
1. Ethical	*Ethically speaking, using AI without proper acknowledgement is wrong as it would be used to credit yourself with work that is not yours.*	13
2. Social	*Relying on AI affects social development, since there is no need for collaboration, discussions, or peer reviews that we can take benefit of. We talked to each other a lot more when we were asked to collaborate on a group summary.*	15
3. Cognitive	*Consistently using ChatGPT, a person may find difficulties with becoming an independent thinker. For instance, when put in a situation where AI is not accessible, the individual will struggle to respond.*	16

Reflecting on their experience, one student group provided insightful reflections, capturing implications for both social and cognitive development:

> *"Upon using AI in your group, you may think that what it has said is automatically correct and cannot be improved upon, which limits your open mindedness to other ideas and criticism from your peers, which could cause problems."*

Overall, these findings imply a positive impact on students' digital literacy understanding, fostered by their engagement in an educational intervention involving a contrastive analysis between their work and that generated by ChatGPT. Specifically, students' observations regarding the vital role of human intervention and verification underscore the contribution of this class activity in enhancing their insight into independent decision-making and learner autonomy when utilizing digital assistance for academic purposes.

Research Question 2: Findings from Student-generated Class Policies and Survey

In the second research question, my objective was to assess how students' involvement in crafting AI class policies fostered their digital literacy and learner autonomy for responsible AI use. Insights drawn from student-generated class policies, informed by their learnings from the contrastive analysis assignment, along with survey responses, played a key role in addressing this question. Students from all three sections collectively produced a total of 16 class policies.

Aligned with the qualitative data analysis approach I employed for research question 1, I conducted a thorough content analysis and topic-ordering process on the data collected from class policies. This method allowed me to identify prevalent themes, each designated with a letter code and further categorized, as depicted in the table below:

Table 7: Topics, Codes, and Categories Identified in Student-generated Class Policies

Topics	Codes	Categories
Rationale	R	1. Limitations of current academic integrity code 3. Ambiguities
Unacceptable uses	U	1. Plagiarism 2. Over-reliance
Guidelines for responsible use	G	1. Human oversight and critical thinking 2. Transparency 3. Verification 4. Acceptable uses for improving readability

Rationale

All class policies consistently emphasized the need for establishing comprehensive guidelines. A common thread throughout these policies highlighted the limitations of the current academic integrity code in adequately addressing AI usage. Specifically, students uniformly emphasized the crucial requirement for specific and updated guidelines to foster responsible AI tool use within an academic setting.

Table 8 below displays the common themes along with excerpts from class policies and the respective number of mentions for each theme.

Table 8: Rationale

Theme	Example (excerpts from students' class policies)	Number of mentions
1. Limitations of current academic integrity code	*However, the current policy written on AI in the syllabus is underdeveloped. This document will provide a more indepth view on what we think should be permissible and why, while staying aligned with our university Academic Integrity Policy.* *We are also creating an enhanced AI policy since the university has not yet updated the Integrity code considering the recent development of AI technology.*	16
3. Ambiguities	*Using AI in a university setting is a controversial topic among teachers and students, and this document plans to unblur the line between acceptable and unacceptable uses in AUS.* *Although AI is mentioned in the syllabus, it is not clear and may not be able to answer all our questions.*	12

After citing the relevant principles outlined in the academic integrity code from both the student handbook and the syllabus, a student group confidently introduced their class policy. They emphasized its more comprehensive and detailed content in comparison:

> *"Our policy includes a more detailed overview on the ethical uses of AI tools, whereas the policies above only discuss plagiarism in general. It is advised to follow through and read our principles carefully to ensure that you avoid violating the University integrity code and facing its consequences."*

Another prevalent theme reinforcing the necessity for class policies was the absence of clarity regarding the permissible boundaries and common misconceptions among students. This primarily

revolved around concerns about their limited awareness and understanding of the acceptable and unacceptable uses of AI tools.

One student group emphasized the significance of complementing university policies with more detailed guidelines to enhance their sense of ownership over the rules. In their own words:

> *"The purpose of this document is to complement the academic policies regarding the use of AI, so that we understand how to utilize it ethically in an academic setting. This will improve transparency between us students and the professor. We are also creating an enhanced AI policy since the university has not yet updated the Integrity code considering the recent development of AI technology. Since we as students are creating this document, we can take ownership of these policies and therefore we will follow them strictly."*

Unacceptable Uses

Another recurring theme I identified in the policies was unacceptable uses of AI for academic purposes, with a concentrated focus on potential violations related to plagiarism and over-reliance. The policies uniformly advocated for a balanced approach, cautioning against over-reliance on AI-generated content, which may result in loss of creativity and critical thinking skills.

The table below displays the common themes along with excerpts from student policies and the respective number of mentions for each theme.

Table 9: Unacceptable Uses

Theme	Example (excerpts from students' class policies)	Number of mentions
1. Plagiarism	*The irresponsible use of AI leads to problems in the cognitive and social skills of students and could lead to violations of the university's plagiarism policies.*	16
2. Over-reliance	*We may be tempted to use AI to improve our academic work and soon get addicted to it; however, this will weaken critical thinking skills and our ability to rely on ourselves.*	13

Regarding over-reliance, one student group emphasized possible consequence on social and cognitive development:

> *"Relying on ChatGPT more than a certain extent does have negative implications on our problem-solving skills as it causes us to be over dependent on it without trying to use our innate ability to be innovative and produce ideas that are out-of-the box. It also leads to the potential loss of human connection, as depending on AI for social and cognitive development can hamper our ability to step out of our comfort zone as we enter the world of reality."*

The mention of creativity, critical thinking, and the potential loss of human connection reveals a broader concern among students about the impact of excessive dependence on AI tools, extending beyond academic performance to social and cognitive aspects. This nuanced perspective suggests a thoughtful consideration of the implications of AI use, reflecting a deeper understanding among students of the multifaceted challenges associated with integrating AI into their academic endeavors.

Guidelines for Responsible Use

All of the class policies crafted by the student groups included guidelines detailing responsible use focusing on four recurring themes: Human oversight and critical thinking, transparency, verification, and potential support in improving readability.

The table below displays the common themes along with excerpts from student policies and the respective number of mentions for each theme.

Table 10: Guidelines for Responsible Use

Theme	**Example (excerpts from students' class policies)**	**Number of mentions**
1. Human oversight and critical thinking	*It is also a good idea to question what the AI has said as it is not necessary to agree with everything it has said.* *If AI was used for any purpose, human oversight must happen, since mistakes may occur because of possible inaccurate information.*	16
2. Transparency	*Students must not treat the generative AI tool as if it is an author and as a credible source, instead they are required to acknowledge any generative*	16

	AI tool usage at the end of the assignment/paper; this acknowledgement must include: The version and model of the AI tool, the name of the AI tool and how it was used throughout the assignment/paper. Students hold full responsibility for the submitted content. Your use of AI tools must be properly documented and cited in order to stay within university policies on academic honesty.	
3. Verification	*In the event of using AI, personally verifying and making sure everything stated is accurate, mandatory, and crucial to the assignment.*	15
4. Acceptable uses for improving readability	*We can use it to get feedback and for advice on improving the clarity of our ideas.* *AI can help us identify our mistakes in word choice and grammar.*	16

As the excerpts from student policies show, there was a consensus among the policies about the crucial role of human input and critical thinking in utilizing AI tools, cautioning against excessive reliance on AI-generated content, as well as transparency and adherence to ethical boundaries.

The policies also stressed the significance of verification when integrating AI-generated content, while also recognizing the positive potential of AI, particularly in enhancing the clarity and readability of ideas. Students agree on acceptable uses, such as obtaining feedback and advice on language precision and grammar. AI is positioned as a tool for constructive improvement rather than a substitute for human input.

Survey Findings

The survey included 2 demographic questions and 6 Likert scale items. Out of the 77 participants, 71 took the survey.

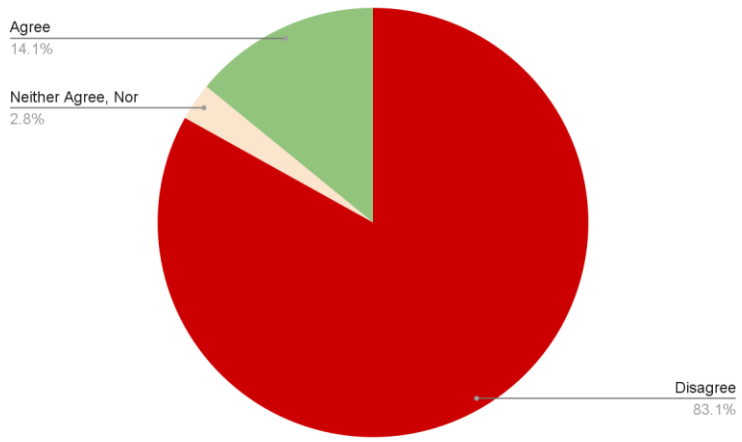
In response to the initial two demographic questions, it was determined that among the 71 participants, 68 were freshmen, and 3 were sophomores. The breakdown by academic affiliation is as follows: 28 students were enrolled in the School of Business Administration, 26 in the College of Engineering, 9 in the College of Architecture, Art, and Design, and 8 in the College of Arts and Sciences.

The remaining 6 questions were likert scale items that required students to indicate their levels of agreement with statements concerning the effectiveness of class activities in fostering their understanding of the ethical and responsible usage of AI for academic purposes and the clarity of the current university policy on AI usage.

Responses to survey questions align with the content analysis of student-created class policies, collectively indicating the favorable influence of students' active participation in shaping classroom policies and regulations.

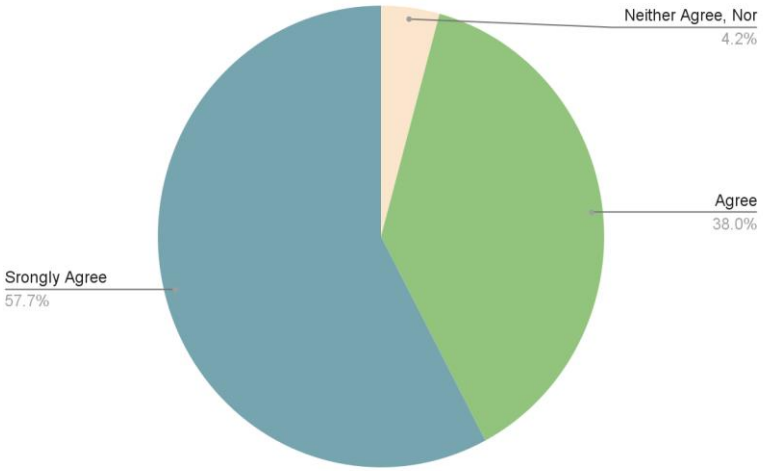
In response to Q3, regarding students' level of familiarity with responsible and ethical AI use prior to the class policy development, findings indicate that only 14.08% agreed they were already acquainted with the concept before the assignment. Conversely, the majority 83.1% expressed disagreement with having prior familiarity. This finding underscores a clear need for education and awareness in this domain.

Figure 1: Analysis of responses to "Q3. Before working on this assignment, I was familiar with the concept of responsible and ethical AI use."



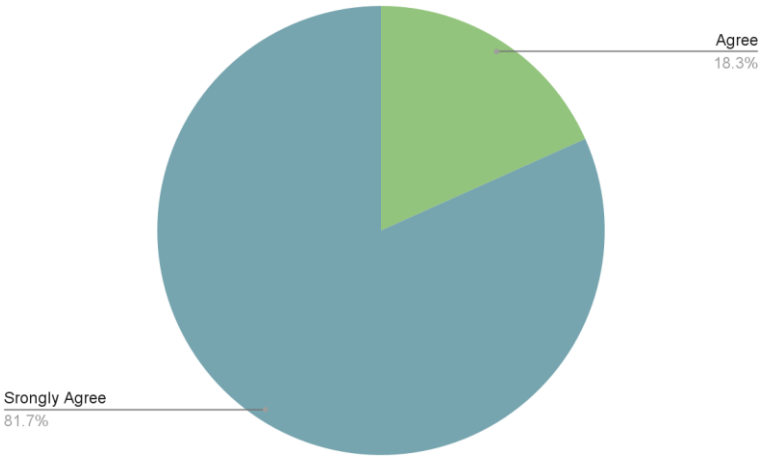
Responding to Q4, where the focus was on the impact of AI class policy development on their grasp of responsible and ethical AI usage, a substantial majority of students either strongly agreed (57.7%) or agreed (38%) that the group assignment significantly enhanced their understanding in this area.

Figure 2: Analysis of responses to "Q4. The group assignment to create the AI use policy significantly enhanced my understanding of responsible and ethical AI use."



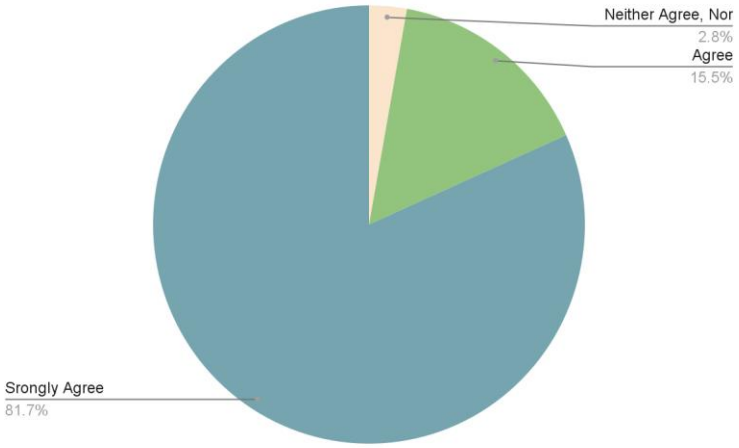
In response to Q5, which delves into students' evaluation of the effectiveness of the class policy assignment in aiding their understanding of unacceptable uses of AI in academic settings, the majority (81.69%) strongly agreed, with an additional 18.31% expressing agreement. These results suggest the assignment's significant contribution to enhancing students' awareness and comprehension of inappropriate AI applications within academic contexts.

Figure 3: Analysis of responses to "Q5. The assignment helped me understand unacceptable uses of AI in academic settings."



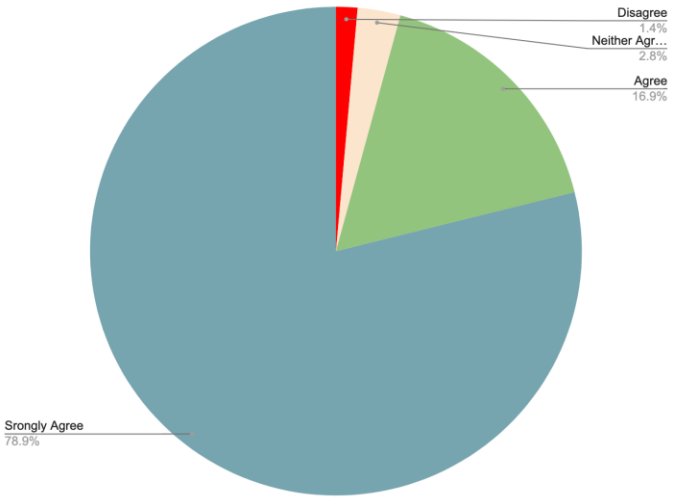
In response to Q6, a significant majority of students (81.7%) strongly agreed that their group's AI policy document effectively communicated responsible and ethical AI use in an academic environment. Another 15.5% agreed, while a small fraction (2.8%) neither agreed nor disagreed. These results underscore the beneficial influence of students' involvement in policy development on their comprehension of principles associated with responsible and ethical AI use.

Figure 4: Analysis of responses to "Q6. My group's AI policy document clearly explains responsible and ethical AI use in an academic environment."



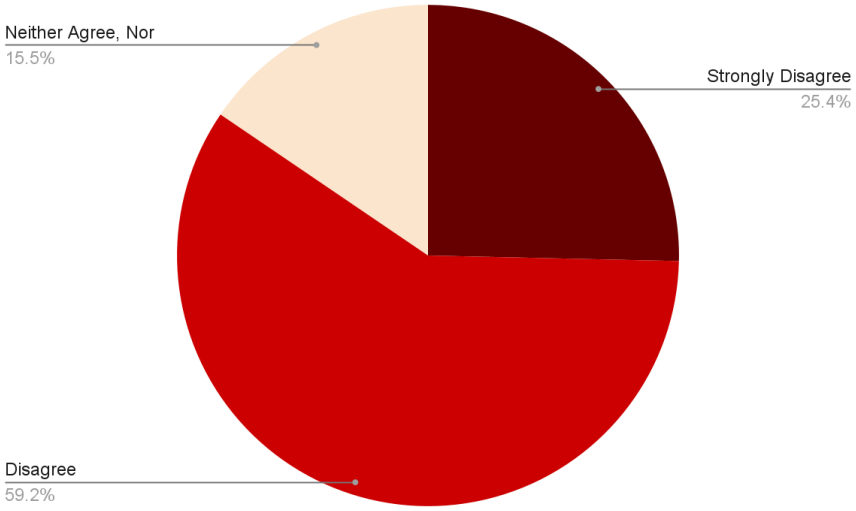
Q7 explored how students' direct engagement in policy shaping influences their commitment to follow guidelines. The results reveal a strong positive relationship, with 95.77% either strongly agreeing (78.87%) or agreeing (16.90%), while only 1 student disagreed, and 2 were undecided. Although these dissenting and undecided responses are a minority, they provide valuable diversity in perspectives, offering nuanced insights into students' attitudes toward active involvement in policy creation.

Figure 5: Analysis of responses to "Q7. I am more likely to follow the class policy on AI usage because I actively contributed to creating it."



As evidenced in the preceding content analysis, a recurrent theme within the student-created class policies revolves around the limitations of the existing academic integrity code in addressing AI usage. Moreover, there is a notable consensus among students regarding the necessity for specific and updated guidelines governing responsible AI tool use in an academic setting. This common theme is reinforced by students' answers to Q8 in the survey. A substantial majority of students either disagreed (59.15%) or strongly disagreed (25.35%) that the university's current AI policy effectively guides students on AI usage. A minority (15.49%) was undecided. These findings indicate that students perceive potential shortcomings in the current AI policy, highlighting areas that may need improvement in guiding students on AI usage.

Figure 6: Analysis of responses to "Q8. The university's current AI policy effectively guides students on AI usage."



Discussion

Key findings from the first research question revealed how the contrastive analysis of human-authored versus AI-generated text helped students identify both limitations and potential supporting features of Chat-GPT. Emphasizing the crucial role of human verification and oversight, this process guided students in drawing insightful conclusions related to their social, cognitive, and ethical development, especially in scenarios involving over-reliance on AI-generated content.

The selected assignment, requiring a 200-word summary of a newspaper article, was the first graded task of the semester. Despite its seeming simplicity, students discovered the limitations of a widely accessible AI tool, offering an eye-opening experience. This observation could serve as a cautionary lesson for future writing tasks, highlighting the importance of thoughtful consideration when integrating AI tools into academic work.

By actively engaging with AI's limitations, strengths, and implications, students independently identified constraints and opportunities aligned with previously cited research (Godwin-Jones, 2022; Kasneci et al., 2023; Meyer et al., 2023; Miao et al., 2021; Stokel-Walker & Van Noorden, 2023; Su et al., 2023; Thorp, 2023). This student-centered approach, rather than a conventional instructor-led explanation, facilitated deeper understanding of AI's multifaceted influence on their cognitive, social, and ethical development.

With regards to the second research question, the findings revealed a notable improvement in students' grasp of digital literacy and their commitment to following the established AI policy, fostering a sense of ownership. This is evidenced by their formulated policy statements and the responses obtained from survey questions. These findings align with existing literature advocating for student involvement in AI policy development, emphasizing negotiation over imposition (UNESCO, 2023; Chan, 2023; Eaton, 2023), and the concept of "curriculum negotiation," where students have agency and voice in shaping their learning (Sivasubramaniam, 2020). Actively involving students in crafting AI policies empowers them to take ownership of their learning, mirroring the broader concept of "curriculuming" described by Boomer (1992, as cited in Sivasubramaniam, 2020), where students are active participants in constructing knowledge.

As for the student-proposed AI policy, it is noteworthy that students astutely identified limitations in the university's existing policy, highlighting its broad and outdated approach in addressing recent technological advancements. This concern aligns with existing literature (Miao et al., 2021; Chan, 2023; Rudolph et al., 2023) which emphasizes that many universities' AI policies in education remain generic and implicit, often due to the lack of concrete evidence on AI implementation. As Stahl and Eke (2024) argue, organizations utilizing AI require reliable guidance, and policymakers need to develop this guidance based on a solid academic foundation.

Notably, students positioned their proposed policy as complementary to the existing one, emphasizing the need for detailed guidelines on crucial aspects of digital literacy, including human oversight, critical thinking, transparency, and verification. Their collective acknowledgment of AI's potential to support learning, albeit approached with caution, demonstrated a comprehensive understanding of digital literacy and offered a nuanced perspective on the complexities of responsible AI use. These findings further support the growing body of research advocating for balanced approaches to AI use in education (Chan, 2023; Kasneci et al., 2023; Meyer et al., 2023; Miao et al., 2021; Ng et al., 2021; Rudolph et al., 2023; Stokel-Walker & Van Noorden, 2023; Su et al., 2023; Thorp, 2023; UNESCO, 2023).

Rudolph et al. (2023) offer a thought-provoking observation by Marche (2022) regarding the potential timeframe for academia to adapt to new AI tools like ChatGPT. They describe a continuum of institutional reactions ranging from "banning or prohibiting the use of the software

and including it in the curricula" (p. 354) Interestingly, both the current study and the observation by Rudolph et al. (2023) highlight the potential for a similar order of response to new AI technologies, with students typically engaging most readily, followed by faculty, and then institutions. While the specific timeframe may vary, this pattern underscores the importance of responsive and inclusive approaches that address the needs and perspectives of all stakeholders.

Following the completion of this study, the institution where the research was conducted recently expanded its AI policy, providing additional guidance for students and faculty, and encouraging further discussion within academic units. This swift adaptation exemplifies the importance of proactive engagement with new technologies in education. It demonstrates a commitment to fostering responsible and informed AI use, aligning with the recommendations of Rudolph et al. (2023) and the broader research landscape.

Recommendations

Drawing on insights from this research, I propose several recommendations for institutions and educators seeking to foster responsible and effective integration of AI in educational settings. While some institutions initially reacted by prohibiting ChatGPT and similar AI tools altogether (Castillo, 2023; Gordon, 2023), a growing body of research suggests that this approach is counterproductive, as students will inevitably encounter and experiment with the technology (Chan, 2023; Kasneci et al., 2023; Meyer et al., 2023; Miao et al., 2021; Ng et al., 2021; Rudolph et al., 2023; Stokel-Walker & Van Noorden, 2023; Su et al., 2023; Thorp, 2023; UNESCO, 2023; Warschauer et al., 2023). This does not mean academicians simply need to integrate this technology due to its popularity, convenience or institutional expectations. As Godwin-Jones (2022) states, "thoughtful, informed differentiation" (p. 13) based on specific contexts, goals, and desired outcomes is crucial. AI integration should align with pedagogical and curricular objectives, not distract students from the communicative purpose of writing (Grimes & Warschauer, 2010). Ideally, it should be woven into a broader writing program emphasizing authentic communication, as noted by the same authors (Grimes & Warschauer, 2010; Godwin-Jones, 2022).

Instead, a more nuanced approach is needed, as outlined below:

1. Reflective Digital Literacy: Enhance students' digital literacy through reflective practices. Encourage them to critically evaluate AI tools, considering limitations and biases, and analyze their impact on learning and knowledge production.

2. Collaborative Policy Creation and Ownership: Actively involve students in developing comprehensive AI policies for your classes, especially when institutional policies are unclear or absent. This approach not only improves students' digital literacy but also cultivates a sense of ownership, empowering them within the academic environment.

3. Transparency and Open Communication: Promote transparency by openly discussing AI use in the classroom, including its capabilities and limitations. Create an environment where students feel comfortable asking questions and seeking clarification.

4. Verification and Critical Thinking: Emphasize the importance of verification and critical thinking alongside AI use. Encourage students to critically evaluate AI-generated content, relying on human judgment and expertise to ensure accuracy and responsible use.

5. Responsible AI Use and Awareness: Raise awareness of AI limitations and the potential consequences of over-reliance. Encourage students to be mindful of these limitations and make informed choices about integrating AI into their learning process.

6. Informed and Guided AI Use: Provide guidance on the capabilities and limitations of various AI tools in relation to specific learning objectives. This helps students utilize AI effectively to achieve desired outcomes and avoid misinterpretations.

7. Ethical Considerations and Reflection: Encourage student reflection on and discussion of the ethical, social, and cognitive implications of AI-assisted work. Engaging in such discussions fosters critical thinking and promotes a sense of ethical responsibility when interacting with and utilizing AI tools.

By implementing these recommendations, educational institutions can empower students and educators to navigate the evolving landscape of AI in education, promoting responsible and effective integration of this technology.

Conclusion

Through this exploratory action research, I examined student engagement with AI in education and its responsible integration, aiming to spark a wider discourse on the associated ethical and practical considerations.

While the limited sample size restricts generalizability, the findings offer transferable insights applicable to similar contexts. The detailed account of the educational intervention employed in this study serves as a practical example of how academic writing assignments can be designed to foster not only digital literacy but also critical thinking, audience awareness, and persuasive writing skills. This is particularly evident in the collaborative writing tasks employed throughout the study. These tasks included the contrastive analysis, where students analyzed the strengths and limitations of human-generated versus AI-generated texts, and the AI class policy development, where students created an AI class policy based on their learning and discussions around ethical,

responsible, and effective use of AI tools. This policy creation process involved students presenting and sharing their proposals with classmates, culminating in a class vote to determine the most comprehensive and well-written policy (further details in Appendices A and B).

These findings contribute to a future where AI serves as a powerful tool in education, employed responsibly and ethically, with human oversight and agency at the forefront.

Appendix A: Assignment Instructions for the Contrastive Analysis Task

Contrastive Analysis of Human vs AI Generated Text

You have successfully completed the first official assignment of the semester on Tuesday, working collaboratively in groups through workshops conducted in class. Throughout this process, you have acquired valuable skills, including:

- writing a summary following academic writing conventions
- using APA style for formatting and documentation
- working productively as a team
- engaging in peer review activities.

Now, we will embark on a critical contrastive analysis, comparing human-generated content with AI-generated content. To do this, please follow the instructions below and provide your responses after a group discussion:

1. Utilize ChatGPT to generate a summary of the article.
2. Please provide a screenshot of your instructions and the output generated by ChatGPT.
3. Identify discrepancies in word choice, style, clarity, coherence, and relevance between your summary and the AI-generated summary.
4. Discuss which summary may be preferable for academic purposes.
5. Carefully read both and identify what information is missing in the AI summary.
6. Based on this experience, discuss whether human intervention is necessary to refine AI-generated output and provide reasons for your evaluation.
7. Engage in a group discussion, considering the ethical implications of employing AI-generated content without proper acknowledgment, verification, or critical evaluation.
8. Reflect on the broader implications of relying on AI for your cognitive and social development, as well as your problem-solving skills, in light of all that you have learned about writing academic summaries through this group project.

Appendix B: Assignment Instructions for Class Policy Development Task

Class Policy for Ethical and Responsible Use of AI Tools for Academic Purposes

Following your contrastive analysis and group discussions on implications, your next task is to collaboratively draft a class policy for the ethical and responsible use of AI tools for academic purposes.

Ensure active participation from each group member in the development of the policy and encourage open discussion to embrace diverse perspectives for creating a comprehensive set of guidelines.

Remember that your classmates are the primary audience. Therefore, use language that is clear, accessible, and relatable to ensure understanding among your peers.

As we agreed in class, your class policy should include the following components:

Purpose:
Briefly introduce the purpose of the policy.

Guidelines:
Develop clear and concise guidelines for the ethical and responsible use of AI tools.
Ensure each guideline is well-defined and actionable.
Provide clear reasons for each guideline.
Consider including a section for unacceptable uses with reasons.

Implications:
Consider how these principles will contribute to a more responsible and ethical use of AI within academic writing classes and beyond.

Thank you for your thoughtful contributions.

Appendix C: Survey Questions

Q1. Which college are you enrolled in?
College of Engineering
School of Business Administration
College of Architecture, Art and Design
College of Arts and Sciences

Q2. What is your current academic year level?

State your level of agreement with the following statements:

Q3. Before working on this assignment, I was familiar with the concept of responsible and ethical AI use.
Strongly agree | Agree | Neither agree, nor disagree | Disagree | Strongly disagree

Q4. The group assignment to create the AI use policy significantly enhanced my understanding of responsible and ethical AI use.
Strongly agree | Agree | Neither agree, nor disagree | Disagree | Strongly disagree

Q5. The assignment helped me understand unacceptable uses of AI in academic settings.
Strongly agree | Agree | Neither agree, nor disagree | Disagree | Strongly disagree

Q6. My group's AI policy document clearly explains responsible and ethical AI use in an academic environment.
Strongly agree | Agree | Neither agree, nor disagree | Disagree | Strongly disagree

Q7. I am more likely to follow the class policy on AI usage because I actively contributed to creating it.
Strongly agree | Agree | Neither agree nor disagree | Disagree | Strongly disagree

Q8. The university's current AI policy effectively guides students on AI usage.
Strongly agree | Agree | Neither agree, nor disagree | Disagree | Strongly disagree

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