AI Use by Higher Education Students Leading to Self-Efficacy in Their Classroom Verbal and Written Communication Skills

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Abstract

Research highlights the benefits of generative Artificial Intelligence in education and its potential to boost students' beliefs in their abilities or self-efficacy. However, the impact on verbal and written self-efficacy remains largely unexplored. Given the widespread use of AI by college students, and its dual capacity to enhance or harm communication, this study examines AI usage patterns affecting self-efficacy. Data from 60 Penn State Abington students reveal that engaged use improves perceived quality, though frequency alone does not. Implications for education and future research are discussed.

Introduction

Artificial Intelligence use in education has surged, with AI chatbots like ChatGPT widely adopted for their accessibility. Research highlights AI's benefits, including improved learning motivation, academic performance, and self-efficacy [1,2], yet concerns about overuse, dependency, and academic integrity persist. Despite these risks, AI's role in education continues to grow. While its impact on technological self-efficacy is well-studied, its influence on students' verbal and written communication self-efficacy remains largely unexplored. This study fills that gap by examining AI usage patterns that enhance communication skills. Overall, the questions that this study seeks to answer are as follows: R1: Is there a correlation between AI usage patterns and verbal & written self-efficacy? R2: Does a higher frequency of AI usage lead to students' increased verbal & written self-efficacy?

Methodology

The survey instrument was designed to assess higher education students' generative AI usage frequency and patterns, and the impact AI has on their perceived self-efficacy in both verbal and written communication.

Table 1: Summary of Survey Measurements, Question Count, and Question Types

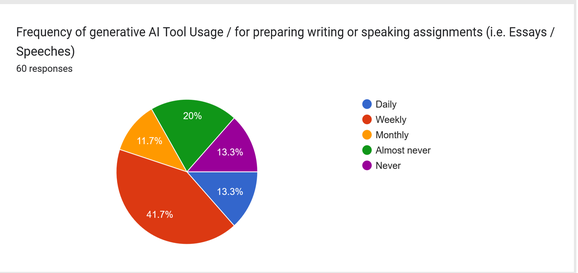
Measurement	No. of Questions	Type of Questions
Demographics	3	Multiple choice
AI Usage Frequency	1	Multiple choice
Writing Self-Efficacy	2	5-point Likert
AI Usage Patterns (Writing)	5	5-point Likert
Speaking Self-Efficacy	2	5-point Likert
AI Usage Patterns (Speaking)	4	5-point Likert
AI impact on Writing	4	5-point Likert, Binary, Open-ended
AI impact on Speech	4	5-point Likert, Binary, Open-ended
AI Ethical Considerations	4	5-point Likert, Binary, Open-ended

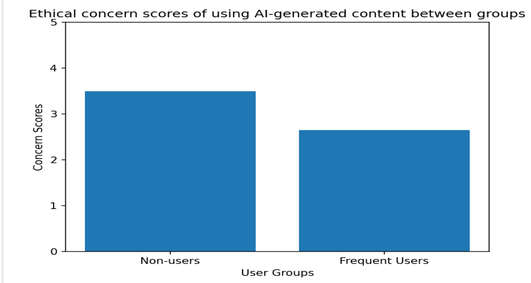
The survey was released on Feb 4th, 2025, to students from Penn State Abington University, and shared across multiple classes from different subjects to obtain a variety of student responses. The survey was only accessible to students who had a valid email address from Pennsylvania State University.

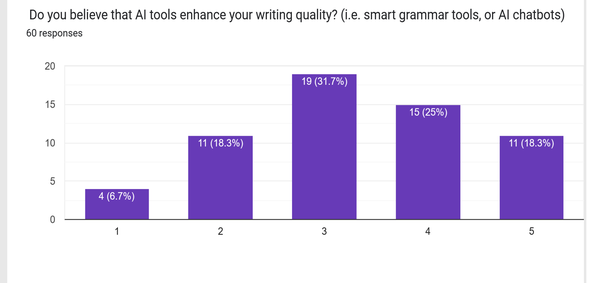
Results

Table 2: Students' Demographic Characteristics

Demographic	Level	Count	Percentage (%)
Gender	Male	27	45.0
	Female	33	55.0
Age	18-19	34	56.7
	20-22	24	40.0
	23-24	2	3.3
Academic Year	Freshman (1st Year)	21	35
	Sophomore (2nd Year)	22	36.7
	Junior (3rd Year)	10	16.7
	Senior (4th Year)	7	11.7







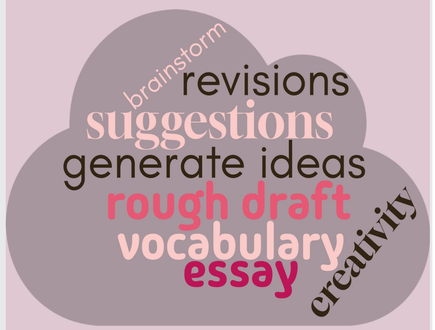
Correlations between AI and Communications Self-Efficacy

Table 3: Correlations between AI enhancement in verbal & written quality and corresponding usage patterns

AI Usage Type	ρ (Writing)	p-value (Writing)	ρ (Verbal)	p-value (verbal)
Brainstorming	0.42	< 0.001	**0.60**	< 0.001
Outlining	0.36	0.004	0.49	< 0.001
Rough Draft	0.39	0.002	0.47	< 0.001
Final Draft	0.35	0.005	0.39	0.002
Grammar Checking	**0.57**	< 0.001	N/A	N/A

Table 4: AI's effect on Writing & Speaking Approach Open-Ended Responses Categories

Category	Description of AI Effect	No. of Responses
Brainstorming	Generating/gathering ideas, writing structure.	6
Rough Draft	Developing rough drafts, providing suggestions.	6
Word Selection	Providing diverse/proper words, expanding vocabulary	4



Discussions

The individual analysis conducted on students' open-ended responses regarding AI's effect on their approach to writing and speaking highlights AI's potential to positively affect these processes and enhance students' abilities. The examination of these responses supports the work done by Chen et al. (2020), Li and Cho (2023), and many others who discovered similar findings regarding AI's potential not only in second language learning but in education overall [1,2,3,4,5]. These findings suggest an indirect correlation between AI usage patterns and writing & verbal self-efficacy mediated through students' beliefs of AI enhancing their writing and speaking quality [table 3]—partially supporting R1. Contrary to our predictions, there was no strong relationship between the frequency of AI use and verbal or writing self-efficacy, as the results did not show a statistically significant correlation between the frequency of AI usage and self-reported verbal and written confidence. The answers that the data provided for R1 and R2 might suggest that regarding AI, quality is better than quantity, suggesting that the value lies not only in how often AI tools are used but in how effectively they are employed to enhance the learning and creative process.

Implications

From the present study, the following implications for education can be drawn: Firstly, students aiming to use generative AI to increase their written and verbal communication self-efficacy should engage in more involved AI usage patterns that allow them to get the personalized and quality feedback offered by generative AI, without sacrificing their integrity, ethics, or personal capabilities, Secondly, given AI's great potential to influence students' college careers and success, it would be beneficial for students to methodically increase their exposure to AI, slowly adapting to it and decreasing their anxiety and concerns towards its use, which would allow them to reap the myriad of potential benefits offered by AI.

Conclusions and Future Research

This study discovered that certain AI usage patterns yield more benefits than others and that utilizing AI in these ways can lead to the notion that AI enhances work quality and might lead to higher self-efficacy in students' verbal and written communication skills. Furthermore, the study revealed that the frequency of AI use alone does not significantly affect students' self-efficacy. However, given that our study used self-determined self-efficacy scores, there's always a possibility of overcounting or undermining the effects of AI on students' self-efficacy. Hence, to mitigate the loss of precision, future research is suggested to employ a longitudinal study that records students' self-efficacy scores before and after AI use to more clearly determine AI's effectiveness in the domains of verbal and written communication.

References

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Additional citations were used for my paper and are available on request.