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Faculty and Student Perspectives on AI Use in Education

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Abstract

As artificial intelligence (AI) tools become more integrated into education, understanding stakeholder perceptions is critical for effective adoption. This study examines faculty and student perspectives on AI in higher education at a Hispanic-serving regional university in the southwestern U.S. Using ethnographic methods and a survey of 161 participants—including undergraduate and graduate students and faculty—the research highlights shared and divergent views on AI's role, benefits, and challenges.

Both groups view AI positively, recognizing its potential to enhance teaching and learning. Students frequently use tools like ChatGPT and Grammarly for writing support and idea generation, while faculty apply AI in lesson planning, grading, and communication. Shared ethical concerns include accuracy, academic honesty, and privacy. However, faculty express greater caution regarding overreliance and pedagogical integrity, whereas students emphasize responsible use and transparency.

A significant gap identified is the lack of AI training for faculty, many of whom reported minimal exposure or support. Students, in contrast, engage informally with AI and report higher comfort levels. The study underscores the need for targeted faculty development, clear institutional policies, and open dialogue to align expectations. Recommendations include expanding training, fostering ethical literacy, and preserving human oversight, particularly in assessment.

Keywords

Technology, artificial intelligence (AI), qualitative, ethnographic, faculty, and student perspectives.

Introduction

The idea of AI, machines thinking and behaving like humans, is rooted in the Science Fiction genre of the mid-1800s. The concept emerged long before the first modern computer was invented in 1946. As men dreamed of computers that could solve human problems and win wars, machines that could walk and talk and learn to complete human tasks, the reality of technology raced to catch up with its astounding fictional counterpart (Osawa, et al., 2022).

AI is now rampant in the daily lives of many first-world citizens. It is available in cell phones, vehicles, and computers. Many services accessed via phone or the internet use digital AI assistants as the first level of customer support. Its use in education provides exciting possibilities that this technology will create new learning opportunities through both innovative use in the classroom and as a prompt for discussions on ethics and equity (Gidiotis and Hrastinski, 2024).

As AI tools become more prevalent in higher education, understanding how faculty and students perceive these technologies is essential for informed decision-making. This investigation examines similarities and differences in how faculty and students view the role, benefits, and concerns associated with AI integration in academic settings. These insights can help institutions develop balanced strategies that foster innovation while maintaining ethical and pedagogical standards. The research questions for this study are

1. What are the faculties' perception and use of AI
2. What are students' perceptions and use of AI
3. What are the similarities and differences between faculty and students' AI use and perceptions?

Literature Review

AI Use in Education

The usage of technology in schools was noted by Seymour Papert (1976) in a proposal submitted to the National Science Foundation in 1975. In this proposal, Papert (1976) stated his team's reasoning for integrating computers into education:

> New technologies *will* diffuse into the schools and in the absence of available well-tried methods, untried ones will become established. And if this happens society will have to pay for one more expensive case of that bind which paradoxically places the major cost of innovation in the undoing of the old rather than the construction of the new. (para. 5)

Papert (1976) and his research team wanted to investigate the usage of computers with junior high school students, with the hopes that integrating computers would enrich students' learning inside the classroom.

Recently, researchers have learned that children as young as four years old are capable of interacting with computers and AI in meaningful ways. Through an 8-week AI literacy program, Su and Yang (2024) found that the AI4KG Curriculum was successful in promoting AI literacy and AI creativity among young children. These young students could grasp the foundational information on AI presented in the first modules of the program and then apply those concepts later in the program to create their own machine learning models using *Teachable Machine*.

Despite being around as early as 1966 with automated essay scoring systems, AI is still a new tool for educators. It requires training and education for teachers to feel comfortable not only in its use but also in its presence in the classroom. There are risks to allowing AI in education, including concerns of equity, bias, and cheating. Digital literacy is vital to ensuring a meaningful experience with this technology. Velander et al., (2024) found that K-12 teachers began the process of adopting AI with preconceived ideas about the tool that influenced their use and perceptions. Teachers were tasked

with using AI but did not feel they had received enough training to prove digitally literate with the technology. Teachers expressed feelings of inadequacy when asked to use AI in their classrooms, with one teacher stating, "I agree with participant x that teachers have far too little competence to provide adequate teaching in these issues" (Velander et al., 2024, p. 4099).

Kong et al. (2025) proposed that AI literacy is an invaluable tool for the current and future generations. Students must be competent to use it effectively. In turn, they will receive a personalized learning experience tailored to their needs. While this technology may not be present in every classroom today, AI is predicted to continue to grow and expand further into education, rural and marginalized areas, as well as in the workforce and the daily lives of citizens in modern society.

Watson (2024) proposed a three-lesson curriculum for exposing AI to students, including an introduction to the tool, machine training, and exploring chatbots. This simple formula, using an Instructional Design approach of Engage, Explore, Explain, Elaborate, and Evaluate is one of many approaches to getting learners started with AI. Just as the prominence of computers has grown over the last few decades, so is the presence of AI likely to grow and thrive in modern society. For this reason, Kindergarten and college students need to learn how to engage with the tool. It's essential that teachers are educated and trained in the use of and implementation of AI in their classrooms.

Preparation for technology has long been a concern of teachers in both K-12 and Higher Education. Cheah, et al. (2025), found that 43% of teachers in rural elementary and high schools in Idaho felt unprepared for the implementation of AI, vs. 5% feeling well prepared. These conclusions were taken from a survey of 89 teachers who have used generative AI for tasks such as developing ideas for lessons and activities, translating information, student feedback on writing, creating spreadsheets, completing paperwork, and grant writing.

Higher education students are using AI in various ways, including writing, language practice, and data analysis. Therefore, it is crucial to understand how students are using it in their classes (Black & Tomlinson, 2025). This usage spans mechanical

tasks to deeper assignments and projects requiring critical thinking and reflection. These uses include tutoring systems, real-time feedback on writing, planning research, and higher-level processes such as making writing more efficient and creating their own personalized learning experience.

Students must perceive the AI tool as useful to engage with them, but perceived usefulness is also an important factor in students' learning with AI. Both perceived usefulness and ease of use were found to be major factors in not only students' adoption of AI chatbots, but also in the effectiveness of learning from the chatbot (Rahman, et al., 2025). Students are aware, however, that AI can hallucinate or generate inaccurate information about a given topic or prompt. Students are cautious in verifying facts with their own research, but the technology provides a good starting point (Black and Tomlinson, 2025). Students also recognize the ethical concerns present with the use of AI in Education (Altikriti and Nemrawi, 2025; Al-Huwail, et al, 2025). In a study of Nursing students' perceptions of AI use, Summers, et al. (2024) found that six themes evolved among students in their thoughts on AI use in education. These themes included the Educational Impact of AI Tools, Equitable Learning Environment, Ethical Considerations, Technology Integration, Safety and Practical Utility, and Generational Differences, all of which align with those of educators.

Teachers use AI to write daily announcements, create lesson plans, and develop rubrics. Administrators are using it to synthesize data and for communication purposes. The tool can identify patterns in data and provide results in report format. More specifically, it can be used to modify IEP goals or identify staffing needs in a Special Education department (Marino & Vasquez, 2024).

Başaran and Duman (2024) surveyed medical students to determine their perspectives on the use of ChatGPT in their coursework. Respondents noted that while the tool presents an advantage in research, it also presents ethical concerns, concerns over data security, and potential for misuse in academics. When Gülhan Güner, et al., (2025) surveyed Health Sciences faculty on their perspectives and experiences, they also reported enhanced research opportunities along with ethical concerns and issues over the accuracy of information. Gülhan Güner (2025) encouraged universities to

establish guidelines for appropriate use and a call for further research. Both students and faculty share similar perspectives on AI in Education.

AI is still new to education, and an abundance of training materials on its use does not yet exist. However, if training were offered, teachers would be much more likely to embrace AI in the classroom. Teachers recognize AI's positive implications as greater student motivation and performance, partly due to adaptive feedback and greater variety in learning modes (Ruiz, et al., 2025). Additionally, teachers have come to recognize how AI can make their lives easier in lesson planning and other classroom components. It is a tool that can enhance the learning experience overall and provide a personal learning environment for students (Kong et al., 2025).

Data Collection and Analysis

Research Design

This study employed a qualitative-dominant mixed-methods research design, drawing primarily from ethnographic traditions and supported by descriptive quantitative survey data**.** While the study collected numerical response frequencies, the primary objective was to interpret the shared perceptions, beliefs, and practices surrounding AI) among faculty and students within a specific institutional context (K-12 classroom settings).

Ethnographic survey methods were selected because they allow researchers to examine how members of a defined group make meaning around a phenomenon, in this case, the use of AI in higher education (Creswell & Poth, 2018). The design captures learned patterns of behavior, values, and beliefs within a culture-sharing group. Faculty and students at this Hispanic-serving institution represent such a group, navigating AI adoption within shared academic norms and constraints.

Descriptive statistics were used to contextualize qualitative patterns, not to test hypotheses. Accordingly, the study prioritizes depth of interpretation over generalizability.

Research Context and Participants

The study was conducted at a small, regional, Hispanic-serving university in the southwestern United States, where a large proportion of students are first-generation college attendees. Participants included undergraduate students, graduate students, and faculty, reflecting multiple stakeholder perspectives on AI integration in higher education.

A total of 161 individuals participated:

- 80 graduate students (49.69%)
- 66 undergraduate students (40.99%)
- 15 faculty members (9.32%)

The distribution of participants' academic status is shown in Table 1.

Survey Instrument

Data was collected using a researcher-developed qualitative survey instrument administered electronically. The survey included a combination of:

- Likert-scale items (e.g., perceived usefulness of AI, comfort with AI in grading),
- multiple-choice questions (e.g., familiarity with AI, types of AI tools used), and
- open-ended qualitative prompts designed to elicit participants' experiences, concerns, and expectations related to AI use.

The faculty and student instruments shared parallel core questions to allow for comparative analysis, with minor adaptations to reflect role-specific experiences (e.g., grading and course preparation for faculty, learning and assessment for students).

Open-ended items were intentionally included to surface perceptions not captured by fixed-response categories, consistent with qualitative survey design in ethnographic

research. Prior to administration, the survey was reviewed for clarity and alignment with the research question.

The survey was distributed via institutional channels during a single academic term. Participation was voluntary, and no identifying information was collected. Responses were downloaded and organized by participant group (faculty vs. students) for analysis.

The Likert scale and multiple-choice items were analyzed using descriptive statistics (frequencies and percentages). These results were used to identify overall trends and to contextualize qualitative findings rather than infer causal relationships.

Open-ended responses were analyzed using a thematic analysis approach. Responses were:

1. Open-coded to identify recurring ideas,
2. Grouped into broader thematic categories (e.g., ethical concerns, training needs, instructional efficiency),
3. Compared across faculty and student groups to identify similarities and differences.

Participant Data

Nearly half of all participants are graduate students, making up the largest group at 49.69%. Undergraduates collectively comprise about 40.99%, while faculty contribute 9.32%.

The data from Table 1 (see Appendix A) represents a breakdown of 161 total participants by academic status. Graduate students enrolled in 500-level courses make up the largest portion, accounting for 49.69% of the total, with 80 individuals. Undergraduate students collectively represent a significant share, with juniors comprising 18.01% (29 individuals), seniors 13.04% (21), sophomores 5.59% (9), and freshmen 4.35% (7). Faculty members make up 9.32% of the group, totaling 15 participants. Overall, the distribution highlights a strong graduate student presence,

followed by a diverse mix of undergraduate classifications and a smaller proportion of faculty involvement.

Faculty Data Using Likert Scale 1-5

Among the 15 faculty members surveyed using a Likert-scale question, the majority reported some level of familiarity with AI. Specifically, per Table 2 (see Appendix A), 73.33% (11 individuals) indicated they are "Somewhat Familiar" with AI, while a smaller portion, 6.67% (1 person), reported being "Very Familiar." Additionally, 13.33% (2 individuals) have "Heard of AI" but lack deeper familiarity, and another 6.67% (1 person) stated they are "Not Familiar with AI" at all. Overall, the data suggests that while most faculty have at least a basic understanding of AI, only a small number consider themselves highly knowledgeable.

When asked whether they have used AI tools in their courses, per Table 3 (see Appendix A), 40% of the faculty respondents (6 out of 15) indicated that they have incorporated such tools into their teaching. The remaining 60% (9 faculty members) reported not using AI tools. This suggests that while a portion of faculty are beginning to integrate AI into their instructional practices, the majority have yet to adopt these technologies in their courses.

Most faculty, per Table 4 (see Appendix A), found AI tools to be either very useful (26.67%) or somewhat useful (33.33%), accounting for 60% of the total responses. Meanwhile, 20% of faculty felt neutral about their usefulness. A smaller portion expressed skepticism, with 6.67% stating that AI tools were not very useful and 13.33% indicating that they were not useful. These results suggest that while most faculty see value in integrating AI into their coursework, a notable segment is either indifferent or unconvinced of its benefits.

Faculty responses revealed varied levels of engagement, as shown in Table 5 (per Appendix A). The most common use was as a writing assistant (21.05%), followed by using AI for presentation creation (15.79%) and generating prompts (15.79%). Only one respondent (5.26%) reported using AI to create course content. Notably, the most

significant portion of respondents (42.11%) selected "Not Applicable," indicating they have not used AI tools in their coursework. This suggests that while some faculty are experimenting with AI in specific academic tasks, a significant number have yet to explore or adopt these tools in the teaching and learning process.

The most common issue raised, per Table 6 (see Appendix A), was the potential for student over-reliance on AI tools, cited by 40% of respondents. Accuracy was the second most noted concern at 30%, reflecting apprehension about the reliability of AI-generated information. Privacy concerns were also significant, mentioned by 20% of participants. A small number of respondents (6.67%) indicated they had no concerns, and just one person (3.3%) selected "Other." These results highlight a general caution among educators, particularly around how AI might impact student learning habits and the trustworthiness of its outputs.

The majority of respondents expressed a positive outlook on the role of AI in enhancing their teaching experience per Table 7 (Appendix A). Over half (53.33%) agreed that AI can support and enhance their teaching, and an additional 26.67% strongly agreed, bringing the total positive response to 80%. A smaller group remained neutral (13.33%), while only one respondent (6.67%) disagreed. These results suggest a general openness among educators to the potential of AI as a supportive tool in the teaching process.

The majority of respondents responded positively, as shown in Table 8 (see Appendix A). Over half (53.33%) agreed with the idea, while 26.67% strongly agreed, indicating that 80% of participants are open to or supportive of integrating AI into grading processes. A smaller portion (13.33%) felt neutral, and only one respondent (6.67%) disagreed. These responses suggest that most educators see potential benefits in using AI to streamline assessment tasks, although several remain cautious.

More than half of respondents (52.94%) indicated they had not received any training on AI per Table 9 (see Appendix A). Of those who have, 23.53% participated in professional development sessions, while smaller percentages attended webinars (11.76%) or conferences (5.88%). One respondent (5.88%) selected "Other," suggesting

a different form of AI training. These results highlight a significant need for more accessible and widespread AI training opportunities.

Faculty Data, Open-Ended Question 1. *How would you like to see AI incorporated into your course instruction and preparation?*

Respondents expressed a range of perspectives on AI training needs. Three faculty members indicated interest in hands-on workshops tailored to their courses rather than passive presentations. Four faculty members saw potential in using AI for idea generation, information sourcing, and routine tasks, enabling greater focus on student engagement. Two respondents noted that they had no idea what AI was or how to use it.

***Open-Ended Question 2**. If you have concerns, briefly explain.*

Faculty concerns about using AI tools in courses vary. Eight faculty members had no concerns, while others expressed minimal worry, depending on future advancements. A few feel that their concerns will ease with more experience. Some acknowledge AI's potential to transform learning but stress the importance of using it effectively. Others appreciate AI's potential for brainstorming and efficiency, though there are concerns about its impact on providing personalized feedback.

***Open-Ended Question 3**. What AI tools or features would you like to learn about to implement in your courses?*

Faculty responses ranged from uncertainty to interest. Four respondents indicated they are unsure or do not know what tools they would want to explore. However, eleven faculty members expressed interest in practical applications such as using AI to create lectures and assignments, assist with grading, select textbooks, and detect cheating, while another specifically mentioned using AI to enhance student feedback and instruction on appropriate AI use. While several faculty members were uncertain, there is a clear interest in learning how AI can support teaching tasks and student engagement.

Student Data, Using Likert 1-5 Scale

A significant majority of students believe that AI can support and enhance their learning experience per Table 10 (see Appendix B). According to survey results, 25.71% of respondents strongly agree, and 40.71% agree with the statement, making up a total of 66.42% who see the potential for AI to be a beneficial tool in their education. However, 27.86% remain neutral, while only a small percentage—3.57%—disagree, and an even smaller 2.14% strongly disagree. The overall consensus indicates a positive outlook on AI's role in education, with most students open to its integration into their learning experience.

The survey indicates that many students find AI tools beneficial to their academic experiences per Table 11 (see Appendix B). Specifically, 35.92% of respondents consider AI tools to be "very useful," while 38.03% view them as "somewhat useful," collectively accounting for 73.95% of the participants. In contrast, 21.13% of students expressed a neutral stance on their utility, and only a small fraction, 2.82%, rated them as "not very useful," with an even smaller 2.11% indicating that they find AI tools "not useful at all." These findings suggest that while AI tools are primarily seen as advantageous by most students, there remains a degree of uncertainty or disinterest among a minority of respondents.

Open-Ended Question 4. *Have you used AI tools in the question above? Briefly explain what and how.*

Grammarly and ChatGPT are used to support academic writing and coursework. Grammarly is integrated into Canvas and helps correct grammar and spelling. One student adopted Grammarly to accommodate dyslexia. ChatGPT also helps build an understanding of unfamiliar topics, generate writing prompts, and overcome assignment challenges.

The survey results highlight the significance of ethical considerations in the use of AI, with the majority of respondents recognizing their importance per Table 12 (see Appendix B). A considerable 60.58% of students regard ethical considerations as "very important," while 17.52% view them as "somewhat important." Together, these responses

reflect a strong awareness of the ethical implications associated with AI usage. Additionally, 19.71% of respondents expressed a neutral stance on the matter, indicating some ambivalence. A very small percentage, 0.73%, consider ethical considerations "not very important," and only 1.46% deem them "not important at all." These findings suggest that most students acknowledge the ethical concerns tied to AI, underscoring the need for responsible integration of AI tools in academic settings.

Open-Ended Question 5. *What are some ethical considerations when using AI?*

Key student concerns include academic dishonesty through misrepresenting AI-generated work, plagiarism, and reliance on non-original ideas. Ethical standards require transparent acknowledgment of AI assistance. Overuse of AI risks spreading misinformation, while sole reliance on AI detection tools, known for high false-positive rates, is problematic. Although some argue that AI-related plagiarism causes minimal harm, submitting work without meaningful human contribution undermines scholarly integrity and the educational process.

Student opinions on using AI for grading and assessment in their classes are varied, with a significant portion expressing neutrality, per Table 13 (see Appendix B). According to the survey results, 7.41% of students feel "very positive" about AI in grading, while 17.78% have a "positive" view. However, a larger group, 46.67%, remain neutral, indicating uncertainty or indifference toward AI's role in assessments. On the other hand, 18.52% of students express a "negative" stance, and 9.63% hold a "very negative" view. These findings suggest that while some students are open to AI in grading, a notable proportion either have reservations or feel uneasy about its application in evaluating their work.

Open-Ended Question 6. *What would you like your professors to know about AI?*

Professors should recognize that while AI can be a helpful tool, human oversight remains essential due to its potential for errors. While AI may assist in tasks like grading, instructors need to review AI-generated evaluations to ensure consistency with course expectations. Concerns arise when AI is used to assess written work, as it may lead to

discrepancies in grading, particularly in informal classrooms where expectations are not as strict. AI systems should be treated as tools for first drafts or supplementary tasks.

Results

Faculty Perspectives

Among the faculty surveyed, the majority indicated at least a basic understanding of AI. Nine faculty members described themselves as having some familiarity with the topic, suggesting a general awareness of AI concepts and tools. However, 4 faculty members considered themselves deeply knowledgeable, indicating that advanced expertise in AI remains limited among faculty. Two had merely heard of AI without gaining substantial insight, and only one reported having no familiarity at all. This range of responses highlights a need for further professional development to deepen faculty understanding and confidence in using AI effectively in academic settings.

Faculty perceptions of AI tools vary, though many view them as beneficial. A majority (9) found these tools helpful, reflecting a general openness to their integration into teaching practices. However, four respondents expressed neutrality or skepticism, suggesting that not all faculty are convinced of AI's effectiveness. These mixed reactions suggest that while there is a growing interest in AI, ongoing support and evidence of its practical benefits may be necessary to build broader confidence and adoption.

Faculty concerns center primarily around its potential effects on student learning and reliability. Twelve faculty members worry that students may become overly dependent on AI tools, potentially diminishing their critical thinking and problem-solving skills. Seven faculty members are concerned about the accuracy of AI-generated content, raising questions about the trustworthiness of the information students may rely on. Privacy also emerges as an issue, with faculty expressing unease about how AI tools handle user data. However, two respondents reported no concerns with AI. The overall sentiment indicates caution about widespread AI adoption in academic settings.

Despite some reservations, faculty members generally hold a positive outlook on AI's potential in education. Twelve faculty members believe AI can enhance their teaching and grading practices, viewing it as a valuable tool to support instruction and streamline assessment. While not all have adopted AI in their courses, the overall sentiment suggests a strong openness to its integration, reflecting a growing interest in exploring its benefits for improving educational outcomes. These responses indicate the majority see AI as a promising tool for instruction and assessment, even if they have yet to implement it.

Only four faculty members have received formal training on AI, highlighting a significant gap in professional development. This limited exposure emphasizes the need for more accessible, varied, and comprehensive training opportunities. Such efforts should include hands-on workshops, webinars, and ongoing support to ensure educators at all experience levels can effectively integrate AI into their teaching practices and remain current with evolving technologies.

Open-ended responses reveal a desire for hands-on, course-specific workshops over passive presentations. Faculty noted interest in using AI for idea generation, sourcing content, and routine tasks to free up time for student engagement.

When asked about concerns, responses ranged from none to cautious optimism. Some faculty members believe their concerns will diminish with experience, while others acknowledge AI's benefits but stress the need for responsibility, especially regarding personalized feedback.

Finally, five expressed uncertainty when asked what AI tools or features they would like to learn about. However, 4 were interested in using AI to create lectures and assignments, assist with grading, select textbooks, detect cheating, and enhance student feedback. This mix of uncertainty and curiosity suggests an openness to learning how AI can support both instructional efficiency and student engagement.

Student Perspectives

A significant majority of students express a positive outlook on the role of AI in their education. Many believe that AI has the potential to support and enhance their learning experiences, reflecting a general openness to its integration into academic settings. While a notable portion of students remain neutral, only a small minority express disagreement. This overall sentiment suggests that students are receptive to exploring how AI can be used to improve educational outcomes and engagement.

Survey responses reveal that many students perceive AI tools as beneficial to their academic experience. Many regard these tools as helpful in supporting their learning, indicating strong student interest in their continued integration. However, a smaller segment of students remains neutral or skeptical, suggesting that while the overall outlook is positive, some uncertainty or lack of engagement may need to be addressed through awareness, training, or demonstration of practical benefits.

Students reported using AI tools like Grammarly and ChatGPT to support their academic writing and coursework. Grammarly, which is integrated into platforms such as Canvas, is commonly used to correct grammar and spelling. ChatGPT is frequently employed to help students better understand unfamiliar topics, generate ideas for writing, and navigate challenges in completing assignments. In addition, students emphasized the importance of ethical considerations when using AI. Most respondents recognized the need for responsible and mindful integration of AI into academic work, reflecting a broad awareness of its potential impact on learning and integrity.

Student opinions on the use of AI for grading and assessment in their classes tend to vary widely. While some students express openness and positivity toward incorporating AI technologies in evaluating their work, a substantial number remain neutral, reflecting uncertainty or ambivalence about the role AI should play in assessment. Others expressed discomfort with AI-driven grading, often concerned about fairness, accuracy, and the potential for impersonal evaluation. These mixed perspectives highlight the importance of transparent communication and thoughtful implementation when integrating AI tools in educational assessments to ensure student trust and acceptance.

Concerns for students include academic dishonesty through the misrepresentation of AI-generated work, plagiarism, and the reliance on non-original ideas. Ethical standards require transparent acknowledgment of AI assistance. Overuse of AI risks spreading misinformation, while sole reliance on AI detection tools, known for high false-positive rates, is problematic. Although some argue that AI-related plagiarism causes minimal harm, submitting work without meaningful human contribution undermines scholarly integrity.

Student perceptions both mirror and vary from those of teachers. Interestingly, while students recognize the enhanced learning opportunities with AI, they also hesitate to use AI due to concerns of overreliance on the tool and loss of critical thinking skills.

Discussions

This study reveals both convergence and divergence in faculty and student perspectives on AI in higher education, consistent with prior research. Similar to findings by Black and Tomlinson (2025) and Summers et al. (2024), students in this study view AI primarily as a practical learning aid, especially for writing and comprehension. Faculty perspectives align with Gülhan Güner et al. (2024), showing cautious interest tempered by concerns about pedagogical integrity and accuracy.

The widespread lack of formal AI training among faculty mirrors trends identified by Velander et al. (2024) and Cheah et al. (2025), suggesting that institutional support has not yet kept pace with technological adoption. While students often develop AI literacy informally, this gap may amplify faculty hesitation and create mismatched expectations.

Ethical concerns expressed by both groups, including plagiarism, transparency, and overreliance, closely reflect themes reported by Altikriti and Nemrawi (2025) and Başaran and Duman (2024). Importantly, students' emphasis on responsible use indicates that concerns about academic integrity are shared rather than oppositional.

Differences emerge most clearly in perceptions of AI-assisted grading. Faculty caution aligns with concerns about depersonalization and accuracy noted by Marino

and Vasquez (2024), while student ambivalence underscores the need for transparent assessment practices when AI is involved.

Overall, the findings reinforce Kong et al.'s (2025) argument that AI literacy must be developed institutionally rather than left to individual experimentation. Ethical integration requires structured training, clear guidelines, and continued dialogue between faculty and students.

Conclusion

Both faculty and students are open to learning about AI in education and acknowledge the ethical considerations involved. They agree that AI can enhance the learning experience but also recognize its potential for producing inaccurate responses. Students tend to be more comfortable using AI than faculty, though faculty members who responded are not opposed to it. Faculty are more cautious, especially regarding the use of AI for grading and use in the classroom. While students see AI as a tool for improvement, some faculty are concerned about its potential for misuse, such as cheating on assignments.

Faculty and student perspectives on AI in education reflect shared optimism and meaningful differences. Institutions can support ethical and effective AI integration that enhances teaching and learning without compromising academic standards by investing in training, policy development, and open communication.

To effectively integrate AI into higher education, institutions should address faculty and student perspectives through targeted initiatives. Faculty development is critical and requires accessible, ongoing training opportunities such as workshops, webinars, and course-specific support to build confidence and competence in AI use. Simultaneously, student guidance is essential; clear institutional policies and educational resources should be established to promote responsible AI use and clarify ethical boundaries. Encouraging open dialogue between students and faculty can further align expectations and promote a shared sense of accountability in the academic use of AI.

Faculty and student perspectives reflect shared optimism about AI's potential alongside meaningful differences in comfort, familiarity, and concerns. Institutions that invest in professional development, ethical guidance, and transparent implementation strategies are better positioned to integrate AI in ways that enhance learning while safeguarding academic integrity.

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Appendix A

Table 1.

Demographics

Faculty	9.32%	15
Graduate Students	49.69%	80
Seniors	13.04%	21
Juniors	18.01%	29
Sophomores	5.59%	9
Freshmen	4.35%	7
Total	100%	161

Table 2.

Faculty: How familiar are you with Artificial Intelligence (AI)?

Answer	Percentage	Count
Very Familiar	6.67%	1
Somewhat Familiar	73.33%	11
Heard of AI	13.33%	2
Not Familiar with AI	6.67%	1
Total	100%	15

Table 3.

Faculty: Have you used AI tools in your courses?

Answer	Percentage	Count
Yes	40%	6
No	60%	9
Unsure	0%	0
Total	100%	15

Table 4.

How useful are AI tools in your courses?

Answer	Percentage	Count
Very Useful	26.67%	4
Somewhat Useful	33.33%	5
Neutral	20.00%	3
Not Very Useful	6.67%	1
Not Useful at All	13.33%	2
Total	100%	15

Table 5.

How have you used AI tools in your courses (check all that apply)

Answer	Percentage	Count
Writing Assistant	21.05%	4
Presentation Creation	15.79%	3
Creation of Course Content	5.26%	1
Creating Prompts	15.79%	3
Other	0%	0
Not Applicable	42.11	8
Tota;	100%	19

Table 6.

What concerns do you have about using AI in your teaching?

Answer	Percentage	Count
Privacy	20%	6
Accuracy	30%	9
Over-reliance	40%	12
None	6.67%	2
Other	3.3%	1
Tota;	100%	30

Table 7.

Do you agree that AI can support and enhance your teaching experience?

Answer	Percentage	Count
Strongly Agree	26.67%	4
Agree	53.33	8
Neutral	13.33	2
Disagree	6.67%	1
Strongly Disagree	0%	0
Total	100%	15

Table 8.

How do you feel about using AI for grading and assessment in your classes?

Answer	Percentage	Count
Strongly Agree	26.67%	4
Agree	53.33	8
Neutral	13.33	2
Disagree	6.67%	1
Strongly Disagree	0%	0
Total	100%	15

Table 9.

What training have you received on AI (check all that apply)?

Answer	Percentage	Count
Webinar	11.76%	2
A Conference	5.88%	1
Professional Development	23.53%	4
None	52.94%	9
Other	5.88%	1
Total	100%	17

Appendix B

Table 10.

Do you believe AI can support and enhance your learning experience?

Answer	Percentage	Count
Strongly Agree	25.71%	36
Agree	40.71%	57
Neutral	27.86%	39
Disagree	3.57%	5
Strongly Disagree	2.14%	3
Total	100%	140

Table 11.

How useful do you find AI tools?

Answer	Percentage	Count
Very Useful	35.92%	51
Somewhat Useful	38.03%	54
Neutral	21.13%	30
Not Very Useful	2.82%	4
Not Useful at All	2.11%	3
Total	100%	142

Table 12.

How important are ethical considerations when using AI?

Answer	Percentage	Count
Very Useful	60.58%	83
Somewhat Useful	17.52%	24
Neutral	19.71%	27
Not Very Useful	0.73%	1
Not Useful at All	1.46%	2
Total	100%	137

Table 13.

As a student, how do you feel about AI for grading and assessment in your classes?

Answer	Percentage	Count
Very Positive	7.41%	10
Positive	17.78%	24
Neutral	46.67%	63
Negative	18.52%	25
Very negative	9.63%	13
Total	100%	135

Artificial Intelligence (AI) Use in Higher Education for College Students: Implications for Classroom Learning

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Abstract

Over the past two decades, the integration of artificial intelligence (AI) into education has undergone substantial advancement, transitioning from simple based and automated systems to highly sophisticated learning environments capable of delivering personalized instruction, adaptive feedback, and data-driven educational support. This evolution has expanded the potential of AI to enhance teaching effectiveness, student engagement, and learning outcomes across diverse educational contexts (Zhang et al., 2025). The emergence of AI has generated widespread debate among educators, policymakers, and researchers about whether these technologies strengthen or threaten authentic learning. Some scholars argue that AI can enhance engagement, personalize instruction, support student success (Chan & Hu, 2023; Kasneci et al., 2023; Luckin et al., 2016; Madanchian et al; 2025; Meng, 2026; Tulli, 2022; Zhang, 2024), promote metacognition (Carlton, 2025), and foster deep learning (Zhang et al., 2025). Other scholars caution that overdependence on AI may undermine the intellectual struggle necessary for learning and compromise traditional notions of academic integrity (Ateeq et al., 2024; Bittle & El-Gayar, 2025; Dwivedi et al., 2023; Michel-Villarreal et al., 2023). These competing perspectives suggest that the issue is not whether AI belongs in higher education, but how institutions should respond to its presence. The integration of AI demands reconsideration of pedagogy, assessment, and student learning outcomes. This research examines the growing use of AI for student learning, discusses challenges and risks associated with its use, and considers implications for teaching and assessment in contemporary higher education.

Keywords: Artificial Intelligence, college students, higher education

Internet-based learning has become an integral component of higher education, with college students increasingly relying on digital technologies to support academic development. Intelligent learning platforms may provide students with opportunities for personalized instruction, immediate feedback, and adaptive learning experiences, thereby enhancing learning abilities, academic engagement, and educational outcomes (Meng, 2026).

Additionally, the rapid integration of AI into higher education has fundamentally altered how college students engage with learning (Jaswanth et al., 2026). AI Powered tools such as generative text systems, adaptive learning platforms, and automated feedback mechanisms are increasingly used for studying, writing, problem solving and examination preparation (Ashokan, Puja, & Gupta, 2025). Research indicates that AI has the potential to increase learner engagement and retention, which may contribute to improvements in the quality of education (Tulli, 2022).

AI-powered tools can provide personalized learning experiences, immediate feedback, adaptive instruction, and increased access to educational resources, all of which can enhance student engagement and academic success (Chan & Hu, 2023; Kasneci et al., 2023; Koohang et al., 2024; Madanchian et al., 2025; UNESCO, 2023). Furthermore, AI technologies can support diverse learning needs and learning styles by tailoring content and learning pathways to individual students, thereby promoting more effective and inclusive educational experiences. Emerging research indicates that students who utilize AI tools tend to achieve higher academic performance than their peers who do not use such technologies, which suggests that AI can serve as a valuable resource for enhancing learning, engagement, and academic success when integrated thoughtfully into the education process (Zhang, 2024). As AI continues to evolve, its thoughtful integration into higher education has the potential to strengthen teaching and learning outcomes while fostering greater student persistence and achievement.

While these technologies offer substantial opportunities to enhance student learning, instructional efficiency, and metacognition, they also raise concerns regarding

academic integrity, critical thinking, and equity, and the future of assessment (Glushkova & Malinova, 2023). If managed appropriately, it is possible to that these challenges may offer students the opportunity to acquaint themselves with the risks of AI usage (Kasneci et al., 2023).

AI is neither inherently beneficial nor detrimental to higher education; rather, it is a powerful tool that can either enhance or undermine educational experiences depending on how it is used and managed. The main issue is how higher education institutions can integrate AI into teaching and learning effectively. Research suggests that the impact of AI is largely determined by how individuals engage with these tools and the purposes for which they are used (Carlton, 2025; Kasneci et al., 2023). When implemented thoughtfully, AI may support learning, improve accessibility, personalize instruction, and foster innovation. However, concerns remain regarding academic integrity, critical thinking, and the potential overreliance on AI-generated content (Chan & Hu, 2023).

The increasing integration of AI in higher education necessitates a reevaluation of teaching practices, assessment methods, and student learning outcomes. This research explores the expanding role of AI in student learning, examines the challenges and potential risks associated with its use, and analyzes its implications for instruction and assessment in contemporary higher education.

Literature Review

Benefits of AI for College Student Learning

AI may significantly improve learning outcomes for college students (when used well) as it can provide instant tutoring explanations, and feedback; support personalized learning (students move at their pace); help with brain brainstorming and idea development; and increase idea development as a collaborative partner (Madanchian et al., 2025; Zawacki-Richter, et al., 2019; Zhai, 2022). Accessibility and inclusion are also important considerations when supporting students with disabilities and first-generation college students, as AI may help mitigate barriers that may otherwise impede academic

success. AI systems may present innovative opportunities to support learners with disabilities and advance inclusive education through adaptive learning technologies, personalized instructional support, and improved accessibility to educational resources (Jaswanth, 2026). Ultimately, AI has the potential to make college students more effective learners, provided they remain actively engaged in the learning and critical-thinking process (Sardi et al., 2024).

One of the most significant benefits of AI in higher education is its ability to support personalized and adaptive learning (Jaswanth et al., 2025; Madanchian et al., 2025). AI-driven systems can tailor content, feedback, and pacing to individual students' needs, which may improve engagement and academic outcomes (Glushkova & Malinova, 2023; Jaswanth et al., 2026; Zawacki-Richter et al., 2019).

AI also has the potential to increase engagement and motivation among college students by creating dynamic and interactive learning environments. Using features such as gamification, competition, simulations, and personalized activities, AI can make learning more engaging and enjoyable. These tools encourage students to participate actively in the learning process and invest more deeply in their education. As a result, AI-enhanced learning environments may improve both student satisfaction and learning outcomes by making education more enjoyable and rewarding (Madanchian et al., 2025).

Emerging research suggests that intelligent learning technologies can positively influence academic development, in general. Students who utilize these tools often report greater interest in learning, largely due to the immediate feedback and reinforcement that they provide, which can strengthen learners' sense of self efficacy. Furthermore, intelligent technologies can support the development of self-regulated learning behaviors by encouraging students to establish learning goals, manage time efficiently, monitor their performance, and engage in ongoing self-assessment throughout the learning process (Zhang, 2024).

AI may also enhance learning efficiency through real-time feedback and academic support (Ashokan, Puja & Gupta, 2025). Generative AI tools can assist students with brainstorming, outlining, summarizing complex readings, and practicing problem-solving, thereby promoting self-regulated learning when used appropriately (Kasneci et al., 2023). Immediate feedback allows students to identify misconceptions early, which is especially valuable in large lecture courses where individualized instructor feedback may be limited.

In addition, AI technologies contribute to accessibility and inclusion in the classroom. Tools such as speech-to-text software, language translation systems, and intelligent tutoring platforms can support students with disabilities, multilingual learners, and first-generation college students (U.S. Department of Education, Office of Educational Technology, 2023). When equitably implemented, AI has the potential to promote academic persistence across diverse student populations. Traditional classroom instruction often struggles to accommodate students' diverse learning needs, backgrounds, and paces of understanding. AI-powered tools can help address these differences by offering individualized assistance, adaptive feedback, and customized explanations.

Generative AI can function as an accessible, on-demand tutor that assists students in understanding difficult concepts, clarifying course materials, and reinforcing learning outside the classroom (Cotton et al., 2024). For example, students can use AI to receive alternative explanations of complex theories, practice solving problems, or obtain immediate feedback on questions. This type of support can be particularly valuable for students who may need supplemental instruction beyond faculty office hours. Research suggests that personalized learning technologies can improve engagement, autonomy, and academic achievement by tailoring instruction to individual learners (Luckin et al., 2016).

Another major benefit of AI lies in its capacity to enhance productivity and efficiency. College students often face competing academic demands, and many use AI tools to support time management and study practices. Students may employ AI to

summarize readings, generate study guides, organize ideas, create practice questions, or receive formative feedback on writing drafts. When used ethically, these applications may scaffold learning rather than replace it. For example, brainstorming with AI may help students generate ideas before composing original work, while feedback tools may support revision and writing development. In this way, AI can function as a supplement to, rather than a substitute for, student effort. Some scholars argue that such uses promote metacognition by helping students monitor their understanding and engage more intentionally with learning processes (Carlton, 2025: Zawacki-Richter et al., 2019). Used appropriately, AI can support academic self-regulation and independent learning.

AI also offers opportunities for deeper engagement with course content when used as a collaborative thinking partner. Students may use AI to test arguments, compare perspectives, simulate debates, or explore alternative interpretations of ideas. Such uses can support inquiry-based learning and encourage critical engagement when students evaluate rather than passively accept AI outputs (Ruis-Rojas et al., 2024). In addition, engagement with AI technologies may contribute to digital literacy and workforce preparation. As AI becomes increasingly integrated across industries, familiarity with responsible AI use is emerging as a valuable professional competency (Walter, 2024). Higher education therefore has an opportunity not only to support academic learning with AI, but to prepare students for evolving technological environments.

Research suggests that artificial intelligence can shape cognitive and metacognitive processes, including critical thinking, attention, self-regulation, and decision-making. However, the extent and nature of this influence depend largely on how AI tools are used. When designed to promote reflection, questioning, and evaluation, AI systems can encourage users to critically assess information rather than accept outputs uncritically. Furthermore, educating users about the distinction between using AI to automate routine tasks and relying on it for complex judgments can strengthen metacognitive awareness and support more thoughtful engagement with AI-generated content (Tankelevitch et al., 2024).

Ultimately, the extent and nature of this impact largely depend on how AI tools are used. When designed and implemented effectively, AI can support learning by encouraging users to evaluate information critically, reflect on their reasoning, and engage in deeper analysis. Integrating critical thinking supports into AI tools can promote self-evaluation and informed decision-making. Furthermore, educating users about the distinction between using AI to offload routine or menial tasks and relying on it for complex reasoning and decision-making can help foster healthy metacognitive practices and more effective use of AI technologies (Carlton, 2025).

Additionally, AI has significant potential to promote equity and accessibility in higher education by reducing barriers to learning and providing personalized academic support. For first-generation college students, multilingual learners, and those requiring additional assistance, AI can offer individualized guidance and flexible, on-demand resources that complement traditional instruction. These supports may be especially valuable for students balancing work, family, and academic responsibilities, contributing to greater persistence and success in college (Johnson & Davis, 2024).

Lastly, AI-powered accessibility tools, including speech recognition, text-to-speech, language translation, automated captioning, and other assistive technologies can help create more inclusive learning environments for students with disabilities and diverse linguistic backgrounds (Jaswanth et al., 2026). Taken together, these capabilities position AI not only as a tool for efficiency but also as a means of expanding educational access and fostering student success.

Challenges and Risks of AI in the Classroom

While the use of AI offers many benefits, educators remain concerned about its potential impact on learning quality when it is overused or misused, including the risk of misinformation. Educators are now aware that AI can automatically produce information that is improper or wrong (Department of Education, Office of Educational Technology, 2023). Improper use of AI may weaken student learning outcomes by encouraging students to shortcut the learning process, for example, by copying

generated content rather than engaging in critical thinking, independent analysis, and creativity. As a result, opportunities to develop essential critical-thinking, problem-solving skills, and creativity may be diminished (Baidoo-Anu & Ansah, 2023). In such cases, it also becomes more difficult for instructors to accurately assess what students know and what they can do.

Additional concerns include the potential for academic dishonesty and violations of academic integrity (Ateeq et al., 2024; Michel-Villarreal et al., 2023). Ultimately, when students rely on AI to complete work for them rather than using it as a learning tool, the educational benefits and intended learning outcomes may be significantly reduced. The increasing use of AI based technologies in education, particularly AI systems such as ChatGPT, has raised concerns regarding student reliance on AI for task completion. When used without appropriate pedagogical guidance, these tools may reduce students' engagement in higher-order learning cognitive processes and limit the development of essential academic skills. Consequently, prolonged independence on AI-assisted learning may contribute to a decline in learning quality and intellectual autonomy over the long term (Mahmudova & Valiyev, 2025).

AI use among college students has generated substantial concern regarding academic integrity (Ateeq et al., 2024; Bittle & El-Gayar, 2025). Generative AI tools can produce essays, solve problems, generate code, and respond to prompts in ways that may blur the line between legitimate assistance and unauthorized academic work. Faculty have expressed concern that students may use AI to complete assignments without demonstrating authentic understanding or original thought. Traditional definitions of plagiarism and misconduct may not fully address AI-assisted authorship, leaving institutions grappling with unclear policies and inconsistent expectations (Cotton et al., 2024). Complicating this issue is the fact that students and faculty may hold different perceptions regarding acceptable AI use. For some students, using AI to revise writing may seem comparable to grammar support, whereas faculty may view certain forms of generative assistance as inappropriate. These ambiguities underscore the need for clearer ethical frameworks and a need for clear policies and student guidance (Bittle & El-Gayar, 2025).

Another significant concern is overreliance on AI, particularly when students use these technologies to bypass rather than support cognitive engagement (Ashokan, Puja, & Gupta, 2025). Critics argue that outsourcing thinking to AI may weaken problem-solving, creativity, and independent reasoning. Deep learning often requires struggle, uncertainty, and sustained intellectual effort. If students rely excessively on AI-generated responses, they may engage less meaningfully in these processes (Ashokan, Puja, & Gupta, 2025). Some scholars have warned that dependence on AI could undermine critical thinking and reduce opportunities for productive cognitive challenge (Baidoo-Anu & Ansah, 2023; Kasneci et al., 2023). The concern is not simply that students may use AI, but that uncritical use may transform learning into passive consumption rather than active intellectual development.

Generative AI systems can also produce inaccurate, fabricated, or biased information. Hallucinated citations, incorrect explanations, and misleading outputs pose risks for students who may interpret AI-generated responses as authoritative. Without strong information literacy skills, students may struggle to evaluate the reliability of AI outputs or verify claims against credible sources. This raises concerns not only about academic quality but about students' development as critical consumers of information. Bias embedded in AI models also raises ethical concerns. Because AI systems are trained on human-produced data, they may reproduce or amplify biases, including social biases (U. S. Department of Education, Office of Educational Technology, 2023). Students using these tools may encounter problematic representations or skewed perspectives unless guided in critical evaluation.

Although AI may expand access in some respects, it may also create new inequalities. Students differ in access to high-quality technologies, familiarity with effective prompting, and levels of digital literacy. Students with greater technological fluency or access to premium AI tools may gain advantages not equally available to others. These disparities raise concerns about fairness and the possibility that AI may reproduce or deepen existing educational inequities (Kasneci et al., 2023).

Implications for Teaching and Assessment

The growing presence of AI suggests that higher education must move beyond reactive responses toward intentional integration. One major implication is the need to incorporate AI literacy into teaching and learning (Delello et al., 2025). AI literacy involves more than technical proficiency. It includes understanding how AI works, recognizing limitations and bias, evaluating outputs critically, using tools ethically, and making informed judgments about when and how AI should be used. Teaching students responsible AI engagement may be as important as teaching traditional information literacy (Walter, 2024). Rather than banning AI altogether, it may be helpful to advocate helping students learn how to engage these technologies thoughtfully and transparently (Tlili et al., 2023).

AI also prompts reconsideration of pedagogical priorities. If information generation and routine tasks can increasingly be supported by AI, instruction may need to place greater emphasis on higher-order thinking, creativity, ethical reasoning, and authentic application. Pedagogies emphasizing discussion, inquiry, problem-based learning, reflection, and collaborative knowledge construction may become increasingly important in AI-infused learning environments (Patrick et al., 2025). Faculty roles may also evolve from content transmitters toward facilitators of critical inquiry and ethical reasoning. In this model, educators help students navigate complexity rather than merely reproduce information (Walter, 2024).

Perhaps one of the most significant implications of AI concerns assessment (Ateeq et al., 2024). Traditional assignments, particularly take-home essays and tasks easily completed through automation—may be increasingly vulnerable to inappropriate AI use. This has led many educators to reconsider assessment design. Scholars have advocated moving toward “AI-resilient” assessments that emphasize process, reasoning, and authentic demonstration of learning rather than attempting to make assessments “AI-proof” (Perkins, 2026).

Examples include:

- Process-oriented writing with drafts and reflection
- Oral presentations and viva assessments
- Verbal assessments
- In-class applied problem solving
- Authentic projects connected to real-world contexts
- Reflective assignments requiring personal synthesis

Such approaches emphasize what students know, how they think, and how they apply knowledge.

Perkins et al. (2024) propose a practical and flexible approach to integrating AI into assessment through the Artificial Intelligence Assessment Scale (AIAS). The framework provides greater clarity and transparency by helping educators explicitly communicate the extent to which AI may be used in each assignment. Rather than relying on broad "AI allowed" or "AI prohibited" policies, the AIAS categorizes assessments into five levels based on the intended learning outcomes. This approach enables faculty to align AI use with specific educational objectives while providing students with clear expectations regarding appropriate use. At higher levels of the scale, students may be required to use AI as part of the assessment process and demonstrate their ability to evaluate, manage, critique, and improve AI-generated outputs. By focusing on the role of AI in supporting learning outcomes rather than on AI detection, the AIAS encourages educators to ask, "What level of AI use best aligns with the learning outcomes of this assessment?" (Perkins et al., 2024).

The rise of AI invites broader reconsideration of what higher education seeks to assess. Rather than focusing primarily on product completion, assessment may increasingly emphasize judgment, reasoning, creativity, and transferable learning. It is important to note however that AI should be used as a support tool rather than a tool to replace the role of human judgement in the educational process (Zhai, 2022).

Although AI technologies offer significant educational benefits, they may lack the capacity to adequately recognize and respond to the complex social and cultural context that learning occurs. This limitation may inadvertently weaken students; sense of identity, cultural affirmation, and belonging in educational environments. Therefore, AI should be viewed as a complementary tool that augments instruction and learning, while preserving the essential tool of human communication, interpersonal relationships, and culturally responsive teaching practices (Mahmudova & Valiyev, 2025).

Discussion

The growing use of AI among college students reveals a broader transformation in higher education rather than a temporary technological disruption. AI is reshaping not only how students complete tasks, but how knowledge is accessed, constructed, and evaluated. The evidence suggests that AI should not be understood solely through binary narratives of promise or threat. Rather, its educational impact depends substantially on how students and educators engage it. Used uncritically, AI may undermine aspects of learning. Used intentionally, it may support personalization, access, and innovation.

This suggests the central challenge is not whether to permit AI, but how to cultivate educational environments where its use supports rather than substitutes for learning. Institutions therefore face important responsibilities, including:

1. Developing clear and ethical AI policies.
2. Supporting faculty development around AI pedagogy.
3. Teaching AI literacy as a core competency.
4. Redesigning assessment for authenticity and rigor.
5. Addressing equity concerns related to access and digital fluency.

One of the most pressing challenges in modern education is striking a balance between utilizing artificial intelligence to improve learning outcomes and preserving academic integrity (Bittle & El-Gayar, 2025). Addressing these issues will likely require ongoing collaboration among faculty, students, administrators, and researchers.

Future research should focus on understanding how students perceive the use of AI in higher education. Examining students' attitudes, experiences, and concerns regarding AI can provide valuable insights into its impact on learning, academic engagement, and educational outcomes. By understanding students' perceptions and addressing their concerns, policymakers, educators, and other stakeholders can develop informed guidelines, policies, and strategies for the responsible and effective implementation of AI tools (Chan & Hu, 2023). Such efforts can help maximize the benefits of AI while mitigating potential risks, ultimately enhancing teaching, learning, and student success in higher education.

Although research on AI in education continues to expand, relatively little attention has been devoted to understanding the changing role of educators and the adaptive processes necessary for successful technology integration. Consequently, significant challenges remain in translating AI innovations into effective educational practice. Future studies should undertake the rigorous and comprehensive examination of AI's influence on teaching and learning to elucidate its long-term effects and determine its potential contribution to educational quality, student achievement, and instructional innovation (Zhang, 2024). Such efforts can help maximize the benefits of AI while mitigating potential risks, ultimately enhancing teaching, learning, and student success in higher education.

Conclusion

AI is rapidly reshaping the landscape of higher education and the learning experiences of college students. Its growing use presents meaningful opportunities to enhance personalized learning, support productivity, promote accessibility, and strengthen digital readiness. At the same time, significant challenges involving academic integrity, overreliance, misinformation, and equity require careful attention (Chan & Hu, 2023).

The implications of AI extend beyond student use alone. They require rethinking pedagogy, assessment, and the broader goals of higher education. Rather than viewing

AI solely as a threat to traditional learning or as a universal solution, educators must approach it as a transformative reality requiring intentional integration, ethical guidance, and pedagogical innovation. When used responsibly and critically, AI has the potential not to diminish learning, but to expand how learning is supported, experienced, and assessed in contemporary college classrooms.

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Leveraging MagicSchool AI to Support Faculty Mental Health and Teaching in Higher Education

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Abstract

A 2022 Gallup Poll revealed that 35% of college/university instructors self-reported frequently or always experiencing burnout. This is the highest reported profession to experience burnout symptoms, second only to K-12 teachers who reported 44% (Marken & Agrawal, 2022). This practitioner article explores the use of MagicSchool AI in the role of higher education and specifically how higher education instructors can use the software to regain time and mental capacity. Drawing upon shared perspectives and collegial conversations, this article examines the experiences of three university instructors from diverse disciplines (special education, counselor education, and pre-service teacher education) who have utilized MagicSchool AI in their teaching practices. Readers will gain insights into how MagicSchool AI can support them in numerous career responsibilities, resulting in better mental health for themselves and the potential for an improved quality-of-life in and outside the classroom.

Keywords: *AI, mental health, higher education*

Introduction

MagicSchool AI is a free FERPA compliant, academic platform designed to support educators in creating lesson plans, differentiating instruction, giving feedback, and more. While there is a paid version of the platform, the free version offers numerous tools for users, giving ample opportunities to gauge if the platform will work for the instructor’s need. The tools are grounded in research and aligned with state standards. The platform's mission is to save teachers time and mental energy so they can focus on student connection and learning outcomes.

Faculty in higher education face significant demands, whether seeking tenure or not. Teaching, service, and scholarship are not simply expected, but are required of full-time faculty in order to retain their position and earn tenure and promotion. These demands have intensified post-pandemic with increased use of digital tools, shifts in student behavior, and unclear guidance on AI use in the classroom (Lederman, 2020).

Many of today’s professors experience cognitive overload, stress, and burnout in their daily work, spending far more than their requisite 40 hours each week, with many working as many as 60 hours per week in the course of their job (Sax et al., 2002). In addition to teaching, professors are required to fulfill service responsibilities and add to the ever-growing body of research through publications. Weekends are often filled with grading and managing course shells and summers and holidays are filled with research that often requires added expense in traveling, which can be an additional financial strain. MagicSchool AI supports educators in completing those tasks by providing teachers with over 60 AI tools for lesson planning, content creation, and student support (Fİliz et al., 2025).

This article offers a practitioner-based perspective on the use of MagicSchool AI in a higher education setting. The aim is to examine its features, applications, and implications for teaching and faculty mental health.

Although MagicSchool AI offers a paid subscription, the free version is robust, supporting instructors in activities such as developing lesson plans, scaffolding lessons for a variety of learner needs and levels, giving feedback, and more. It is based on best-practices research in the field of education and aligns with state standards. The platform offers numerous tools on their free platform and also offers a paid membership that allows members more detailed tools and early access to developing tools.

Many pre-pandemic courses that were taught synchronously and in-person are now taught online and asynchronously, no matter the discipline. If not careful, an online instructor may begin to feel that they are little more than a facilitator who simply pushes content through learning management system modules (LMS). Instructors have struggled not only with this new delivery method of the LMS, but also with learning how to actually implement digital tools into the LMS to deliver their content. In addition to the new delivery methods and lack of in-person engagement with students, Arum and Roksa's (2010) research in their book, *Academically Adrift: Limited Learning on College Campuses*, reveals that undergraduate students are not learning to think critically, which undoubtedly adds another layer to the concerns of teaching online. All of these struggles in the course of current teaching experiences are in addition to any service and research requirements set forth by their university which professors must accomplish in their pursuit of tenure and promotion.

Platform Overview

Like many academic platforms, MagicSchool AI allows faculty to perform a variety of tasks, including writing emails and newsletters, generating assignment feedback, and planning lessons. For example, instructors can draft a professional but empathetic email to a student who missed two weeks of class due to illness or create a 50-minute lesson plan on Universal Design for Learning for graduate students that includes a 10-minute interactive activity. The platform also supports the writing of IEPs (Individualized Education Programs), allowing differentiation of assignments to meet various needs and reading levels of students. For example, an assignment description can be rewritten at an 8th-grade reading level while preserving the original expectations for a graduate course support document.

MagicSchool AI also employs a chatbot named Raina who can answer questions about the platform and how to use various tools within the platform.

Additionally, MagicSchool AI helps faculty build rubrics and assessments that are aligned with instructional goals and course expectations.

MagicSchool AI is producing a weekly blog post at the time of this study.

Perhaps one of the most interesting aspects of MagicSchool AI is that it allows users to insert YouTube videos and the online platform can then build quiz questions and supply answers from the YouTube video. The greatest limitation seems to be a lack of platform resources for specific topics at the higher education level, but the platform still performs effectively for many higher education instructional tasks.

Purpose of the tool

Our purpose for sharing information about MagicSchool AI is to inform higher education instructors that although MagicSchool AI is typically used by K-12 teachers, many of the functions of the software work well to support the higher education instructor, no matter the discipline. MagicSchool AI endeavors to support educators on numerous levels and allow them to differentiate instruction. The goal of MagicSchool AI is to save educators time in order to develop relationships with students and their families.

Although student-teacher relationships are often highlighted in grades K-12, there is not as much written regarding the relationships of instructors with students in higher education. (Myers, 2004) states that the degree of communication with higher education students, both in and out of class, impacts an instructor's credibility as perceived by students. MagicSchool AI supports this effort in communication through the use of helping write professional emails, give feedback on assignments, and even scaffold assignments for better student engagement. Other benefits of MagicSchool AI are that it saves time (the website states up to 10 hours per week), all of which are designed to increase mental capacity and diminish cognitive overwhelm for educators.

In this article, readers will gain information regarding many of the tools included in the free subscription of MagicSchool AI and how the researchers of this article use them in their own courses.

The Educational Landscape

Educational classroom faculty and other personnel are facing increased demands to meet accreditation standards, demands to engage with students in an ever-growing world of social media and other digital products that tend to make learning look old-fashioned, and increased demands to improve academic performance. Additionally, instructors are expected to plan lessons that capture the imagination of every student, no matter what learning level or even motivation/engagement level the student is at. And teachers are suffering burnout and leaving education as a result (Sutcher et al., 2016).

As if all of that were not enough, there is the new reality of artificial intelligence (AI), which, while not brand new, is making its presence known in every area of education. Generally, teachers bemoan how their students are using AI to cheat, and there seems to be little clear direction from school leadership about how to best use AI in the classroom.

But, what if there were a way to use current AI products to support instructors' mental health in the classroom and relieve pressure, and possibly save time? The authors of this article use MagicSchool AI on a regular basis to plan lessons, share feedback, and demonstrate professional skills such as developing Individualized Education Plans (IEPs) and therapy session note-taking. We find that MagicSchool AI saves us time as we develop up-to-date learning materials, and more than this, we enjoy positive mental health gains with the time-savings it offers and cognitive bandwidth it preserves.

With both the free and paid subscriptions educators, assisted by the site's chatbot, Raina, find answers to many of the challenges they face such as developing a quick handout at the last minute, brainstorming, or acting as a tutor for their students. The challenge the authors found with Raina is that this feature does not save chats, so valuable materials must be copied into another document for preservation. Even the paid version does not offer a mechanism to save chats, so that is something that could be improved in the site. However, when working directly with specific tools within the site, it is possible to save developed products.

In our own roles as university professors, we have dealt with the joys and challenges of the "big three" required for tenure: teaching, service, and scholarship. These requirements are typically present for all full-time faculty (whether or not they are tenure-track professionals), but have changed shape during the pre- and post-pandemic years. Additionally, with the developing use of artificial intelligence (and the concerns that have resulted in few answers), and the outcomes of post-pandemic student behaviors are frustrating and time-consuming. While newer faculty may not be tasked in the same ways of previously seasoned professors, we face new challenges that are unprecedented by our mentors, who also have few answers.

These “big three” responsibilities, along with daily new challenges that face educators of all levels, result in discouragement and frustration and, perhaps most unfortunate, teachers leaving the educational workforce before even fully learning their discipline. Surely in this age of burgeoning technology, there is an answer to support educators that will help alleviate this new epidemic that far too often results in burnout on a multitude of levels.

As experienced educators and professionals in our discipline, we have found the MagicSchool AI platform to be one such answer. Although more academic platforms such as this are rapidly developing, MagicSchool AI is the most prevalent of these platforms and the one we are most familiar with.

In this article, we review some of the features of MagicSchool AI and the practical applications that many instructors are finding to support their daily life in the classroom. The potential impact is enhanced, current lessons, renewed excitement in the classroom, and best of all, the positive impact on the instructor's mental health.

Context

As artificial intelligence increases on a daily basis, so seemingly does the number of education-supported AI platforms. Platforms such as MagicSchool AI support educators of all levels with almost every aspect of their teaching career. Marken & Agrawal (2022) report that not only are K-12 teachers at risk for high burnout, but so are higher education faculty, which supports the need for effective professional tools for all educators.

Our Process

This article focuses on practitioners seeking to alleviate mental overwhelm and regain time to focus on the most important aspect of their career: educating students. The educators written about in this article have used MagicSchool AI (across approximately four semesters each) in various ways and for numerous semesters. Our assessments are based on our own classroom use, teaching preparation, research

responsibilities, and service commitments, with reflections drawn from both in-person discussions and written communication rather than formal empirical data collection.

The following vignettes illustrate how faculty from different disciplines have incorporated MagicSchool AI into their instructional and professional responsibilities.

Case Vignettes

Dr. Janet Birkey, an assistant professor at a New Mexico University, who teaches synchronous and asynchronous classes on the graduate level, uses MagicSchool AI primarily to develop rubrics, workshop/speaking outlines, case studies, and lesson plans. As a counselor educator, she has also found it valuable in uploading a clinical video with a YouTube URL and asking MagicSchool AI to develop questions that can then easily be put in the university's learning management system's quiz interface. Birkey also uses the tool to teach students how to write commonly known counseling progress notes for therapy sessions which use the acronyms SOAP, DAP, and BIRP. She also uses MagicSchool AI to develop handouts, worksheets, and practice prompts for each style of note that the student is required to learn.

MagicSchool AI is FERPA compliant, making the feedback to be one of Birkey's most favored features. She reduces laborious grading tasks by uploading specific assignments (minus student names) and reviews feedback from MagicSchool AI to make sure it is appropriate for the student, the assignment, and the developmental level of the student. She makes changes as needed in regards to the work. While MagicSchool AI does not assign a grade to the assignment, it does give insightful

feedback and is much more specific than professors have time to devote to every assignment.

Dr. Elizabeth Lester, an associate professor and department chair at a mid-sized university in New Mexico, has used MagicSchool AI extensively to support both instruction and course design in undergraduate and graduate education courses. She teaches both in-person and distance learning classes within the education department, with a particular focus on special education teacher preparation.

One assignment in her special education coursework requires pre-service teachers to develop a full mock Individualized Education Program (IEP) for an upper elementary student with a specific learning disability. In this assignment, candidates write three measurable annual goals aligned to present levels of academic performance, including reading fluency, written expression, and classroom accommodation planning. MagicSchool AI has helped scaffold this process by generating model goal examples at different levels of complexity, providing sample present-level statements, and creating differentiated case scenarios that allow students to compare stronger and weaker versions of IEP writing.

Previously, Dr. Lester would spend nearly an hour creating differentiated examples for students at varying skill levels; now she can generate three leveled versions in about 10 minutes and spend the remaining time conferencing individually with students about goal alignment, compliance language, and instructional relevance. This has allowed more class time for discussion, revision, and applied feedback rather than instructor preparation alone.

In addition, MagicSchool AI has supported lesson design by helping generate examples of accommodations, behavior supports, and specially designed instruction tied to disability categories commonly studied in coursework. For pre-service teachers who are often learning legal language and technical writing for the first time, these AI-generated scaffolds reduce initial cognitive load and help students focus on understanding why an IEP component is written a certain way rather than simply copying a template.

Mandy W., an adjunct instructor at two universities, uses MagicSchool AI to teach pre-service teachers in distance learning courses. She uses the tool to create lesson plans, support differentiation, and create goal creations. She also uses YouTube video question tools for discussion boards and creates student/parent scenarios for students to apply their knowledge. Mandy also uses MagicSchool AI for course development, creating interactive activities like goal creation and AI tweaking. Her students range from 5-25 in each semester.

Supporting Faculty Mental Health

Instructors who use MagicSchool AI may find that their workload results in less cognitive overload which leads to teacher burnout and the inability to remain engaged in their profession (Madigan et al., 2023; Ma et al., 2024; Akinwalere & Ivanov, 2022; Global Educational Studies Review," 2020). When teachers are able to lessen cognitive overload, their capacity to engage more with students in individualized learning activities increases (Roméro et al., 2023). Automating tasks such as rubric design, IEP

development, and lesson scaffolding also allows instructors to engage more in the lesson planning process (Lampou, 2023).

Faculty mental health concerns are at an all-time high, in part due to teachers adding additional learning supports for students since the COVID-19 Pandemic began, but there is little to no research to support teachers in doing this in a way that "does not continue to contribute to faculty workload and overburden, which can result in chronic stress, emotional fatigue, and decreased job satisfaction" (Grewe, 2023, p. 231). Grewe goes on to say that the desire to support student success "can often come with consequences to the faculty themselves, including stress, feelings of emotional fatigue, and other undesirable attributes that can lead to burnout and job dissatisfaction" (Grewe, 2023, p. 231).

When compared to other professions, teachers seem to be at a higher risk of low-emotional wellbeing, both psychologically and physically (Ohri et al., 2026), stating that lower levels of well-being impact "autonomy and competence, resulting in diminished motivation and engagement" (p. 732). While this is not necessarily news to anyone familiar with the teaching profession, there is research that supports the use of artificial intelligence to support work-life and job satisfaction among university faculty (Huang and Zha, 2025). Huang and Zhou state that AI literacy should be enhanced in teacher training programs which can increase teacher confidence. Their findings further supported that AI literacy increased the three basic psychological needs of Self-Determination Theory, perceived autonomy ("volitional behavior and self-guided action"), perceived competence ("reflects individuals' beliefs in their abilities to

successfully perform tasks”), and perceived relatedness (“pertains to the sense of meaningful connection and support from others”) (p. 4).

Discussion and Conclusion

Artificial intelligence is developing quicker than anyone can stay abreast of in our current digital climate. As a forerunner in educational AI, MagicSchool helps educators navigate this landscape and recover some of their time and mental capacity by enhancing their own performance and that of their students through offering tools that AI excels at and far too often bogs the teacher down in fruitless details (Delello et al., 2025).

Based on our experiences, we recommend that higher education instructors begin by using MagicSchool AI for instructor-facing tasks such as drafting emails, generating initial rubrics, and creating quiz questions, rather than immediately integrating AI-generated materials into graded student work. Piloting the platform in a single course for one semester, while informally tracking time spent on preparation and perceived stress each week, can help instructors gauge its impact on workload and well-being. Additionally, setting personal boundaries, such as always reviewing and revising AI-generated content before use, can support ethical practice and prevent new sources of anxiety related to overreliance on AI.

Summary of Findings

Our findings indicate that MagicSchool AI is a supportive platform for teachers in higher education in that educators can find a use for most of the tools it offers, but it also preserves mental capacity by lessening cognitive load over more tedious and time

consuming tasks. This does not lessen the requirements of educators, but instead serves as a support to help them do what they are hired to do: educate students. Our experience is that most professors are concerned about using artificial intelligence in their courses, and due to the many negative impacts it holds, rightfully so. However, artificial intelligence is only going to grow and develop. Because of this, professors must stay current with their students, who are developing their careers in the age of AI. For those who are hesitant to begin, perhaps using it to lessen their own workload (before using it directly with students) is the place to begin.

Limitations and Future Research

As a primarily practitioner's article, our research is based on our own experience of the use of MagicSchool AI. We also acknowledge that quantitative research in the area of professor use would enhance reliability and validity of our initial findings. Additionally, when using our own experiences, there is the opportunity for bias in that the positive gains we experienced may be due to other contributing factors.

Future research could include designing a quantitative study on the effects of higher education professionals who use MagicSchool AI. This research could involve using a validated and reliable survey instrument to assess recaptured work hours, emotional and mental well-being, and the effect on relationships of classroom instructors with students. Using a control group would add to the validity of the research.

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Artificial Intelligence: Perceptions and Educational Implications in Accounting

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Abstract

This study examines generative Artificial Intelligence (AI) perceptions across stakeholder groups in accounting: undergraduate and Master of Business Administration (MBA) students, recent college graduates, and employers based in California and Alabama. Using a mixed-methods design, we analyzed survey responses, applying Chi-Square and Kruskal–Wallis tests to assess differences in AI use, perceived benefits, risks, and job impacts. To contextualize findings, we conducted an environmental scan of AI-enabled accounting tools, highlighting trends in functionality, affordability, and integration. Results show significantly higher AI use among professionals than students, reflecting workplace-driven diffusion. Across all groups, there is strong consensus that AI enhances fraud detection and financial reporting, with no significant differences. Beliefs about job creation differ significantly with employers highly optimistic and students more skeptical. Overall, findings highlight a gap between professional experience and student perceptions, underscoring the need for accounting education to increase AI exposure and emphasize evolving career opportunities. The study contributes to accounting education by aligning empirical insights with evolving industry expectations.

Keywords: *Artificial intelligence, Accounting, Adoption, Education, Governance*

Introduction

The accounting profession is undergoing a profound digital transformation driven by artificial intelligence (AI), automation, and data-centric platforms. While early AI adoption was concentrated among the Big Four and large enterprises, a growing ecosystem of modular, cloud-based tools now targets small and mid-sized firms, offering affordable subscriptions and seamless integration with incumbent systems such as QuickBooks, Xero, and NetSuite. These developments reduce financial and technological barriers, enabling even modest firms to layer "add-on intelligence" atop existing general ledger (GL) and ERP systems.

This democratization of AI aligns with a broader shift in professional expectations: while core accounting deliverables remain stable, financial statements, tax returns, budgets, and supporting workpapers, the methods of producing them are rapidly evolving. CPAs must adopt a productivity-driven mindset, where AI is viewed not as an end in itself but as a tool to enhance the accuracy, timeliness, and efficiency of traditional work products. In practice, this means focusing on how AI tools like ChatGPT, Microsoft Copilot, and data analytics platforms can accelerate tasks without compromising professional standards.

Amid this transition, accounting education faces a dual imperative. First, curriculum must prepare graduates for immediate practice-readiness (e.g., Excel proficiency, internal controls, data preparation), and second, educators must equip students for AI-augmented roles that require fluency in analytics, interoperability, and ethical oversight. This study addresses that challenge by comparing the perceptions and expectations of five stakeholder groups. Our goals are threefold: (1) to assess perceived importance and expected proficiency of GenAI; (2) to evaluate actual AI usage and perceived barriers in professional practice; and (3) to inform curricular models that bridge student aspirations with employer needs. To do so, we triangulate original survey data, follow-up interviews, and a market scan of over 50 AI-enabled accounting tools to understand how adoption barriers increasingly reflect organizational constraints, people, process, and integration.

Literature review

Adoption of AI Across the Accounting Pipeline

Recent research consistently documents a shift from AI experimentation to operationalization across industries, with measurable adoption taking root in accounting functions. The Wharton–GBK Year-Three report outlines this trajectory as a three-phase evolution: from exploration (2023) to experimentation (2024) and finally to accountable acceleration by 2025, as organizations embed AI into key performance metrics such as profitability, workforce productivity, and process throughput. This progression reflects a diffusion of innovation (Wharton–GBK, 2025). KPMG's AI Quarterly Pulse Survey (Q3 2025) reinforces these trends, finding that most organizations have GenAI agents either in production (42%) or in pilot phases (55%). Enterprises now favor hybrid build-and-buy strategies and increasingly apply human-in-the-loop controls and sensitive data restrictions. Critically, firms report that traditional financial metrics are insufficient to capture AI's impact, prompting the development of custom KPIs. These findings are echoed in Protiviti's AI Pulse Survey – Vol. 1 (2025), which classifies most organizations within early to mid-stage maturity levels, with only 8% reaching "transformation." Functional deployment is broad but anchored in IT, customer service, and operations. Notably, ROI expectations improve with maturity, suggesting that AI's benefits scale with systemic integration and governance capacity.

Use Cases: Automation, Risk, and Analytics

The literature suggests several transformative use cases for AI in accounting:

Automation and Operational Efficiency

AI systems are increasingly automating transaction processing, reconciliations, and close cycles. Studies document the efficacy of CRPA (Cognitive Robotic Process Automation), achieving up to 98.6% invoice accuracy and 30% faster financial close timelines through intelligent workload balancing and predictive adjustments (Perplexity, 2025). This affirms the argument that AI enhances, not replaces, core CPA deliverables such as budgets, tax filings, and financial statements

Fraud Detection

Recent advances in machine learning, particularly ensemble methods and graph-based anomaly detection, consistently outperform traditional rule-based systems in identifying fraudulent transactions, achieving detection rates of up to 83% (Biswas & Tarafder, 2025; Sallem

et al., 2024). These approaches leverage large datasets to identify subtle patterns and relationships, including network-level anomalies such as collusive behavior. Unlike static rule-based systems, machine learning models adapt to evolving fraud schemes through continuous learning. As a result, they enhance continuous auditing by enabling more comprehensive, real-time monitoring rather than reliance on periodic sampling.

AI Auditing

In assurance contexts, high predictive accuracy alone is insufficient; explainability remains essential. Techniques such as SHapley Additive exPlanations (SHAP) and Local Interpretable Model-agnostic Explanations (LIME) (Zhong & Goel, 2024) enhance transparency by providing interpretable, auditable explanations for AI-generated classifications, thereby helping to bridge the trust gap between algorithmic outputs and professional judgment. These methods allow auditors to understand key drivers behind model outputs, evaluate their reasonableness, and document decision processes within audit workpapers. By making model behavior more transparent and traceable, explainability tools help align AI outputs with regulatory expectations and professional standards, thereby strengthening trust in AI-assisted assurance procedures.

Strategic Advisory and Predictive Intelligence:

AI-driven forecasting platforms, such as Jirav and Cube, are increasingly positioning accountants as strategic advisors. These tools support driver-based modeling, scenario planning, and narrative reporting with capabilities once limited to enterprise systems. These tools also integrate seamlessly with small-firm platforms like QuickBooks and Xero (Ringstrom, 2025). In parallel, Monte Carlo simulations powered by reinforcement learning have accelerated financial planning cycles, enabling real-time strategy optimization and moving organizations from static quarterly models to continuous, adaptive forecasting (Perplexity, 2025).

Governance, Ethics, and Regulatory Pressures

Governance and ethical considerations remain central to AI's professional legitimacy. The Stanford AI Index 2025 documents surging regulatory activity, growing incident reports, and supply-side constraints such as data scarcity, all of which signal a need for AI accountability regimes. Algorithmic transparency, privacy protection, and auditability are not only technical

issues but also institutional concerns (Laine et al., 2024; Lassiter & Fleischmann, 2024). Regulatory compliance mechanisms like blockchain registries and model documentation are increasingly required, especially in cross-border contexts where regimes like the EU's AI Act and U.S. principles-based approaches diverge (Perplexity, 2025).

AI in Accounting Education - Gaps and Curricular Response

The profession's transformation demands corresponding changes in accounting education. Scholars have long argued for embedding analytics and ethics into core accounting curricula (Apostolou et al., 2021; Lawson et al., 2014), and new research supports this trajectory. Adaptive learning systems now map student competencies to real-time regulatory updates, while virtual audit simulations enhance fraud pattern recognition three times faster than traditional cases (Perplexity, 2025). Still, concerns remain: Ballantine et al. (2024) caution against uncritical adoption, emphasizing the need for critical integration.

Our study contributes to this literature by empirically documenting exposure and perception gaps across five stakeholder groups and proposing a tiered curriculum model. This includes foundational fluency for all students, applied analytics electives, and advanced governance pathways, thus aligning graduate preparation with the evolving AI-augmented accounting landscape.

Methodology and Analytic Approach

This study employed a mixed-methods design to examine the adoption, usage, and perception of artificial intelligence (AI) in accounting across both educational and professional contexts. While much of the extant literature focuses on large national and global firms (e.g., Biswas & Tarafder, 2025; Sallem et al., 2024), this research addresses a critical gap by concentrating on small and mid-sized firms operating in two distinct U.S. regional labor markets: Northern California's North Coast and Central Alabama. These geographies, anchored by Cal Poly Humboldt and Auburn University, respectively, were intentionally selected for their divergent client bases, technology ecosystems, and economic profiles.

The North Coast region of California, comprising Humboldt, Mendocino, and Trinity counties, is marked by rural-urban gradients and lower firm consolidation, serving a client base that includes cannabis enterprises, tribal governments, and environmental NGOs. By contrast,

Central Alabama, defined here as Montgomery, Lee, and Jefferson counties, presents a more urbanized landscape with concentrated activity in manufacturing, banking, and government auditing. These contrasts allowed the research team to investigate how regional economic structures influence AI adoption trajectories and labor market expectations in the accounting profession.

Survey Design and Sample

The primary data collection instrument was a structured online survey, collaboratively developed and pilot-tested for clarity and technical reliability. Survey invitations were distributed electronically using curated contact lists sourced from local CPA societies, university alumni networks, and regional business directories. To ensure firm-level representation, only one respondent per firm was permitted, with participants spanning a range of roles from entry-level staff to firm partners.

The final sample included 79 respondents. 22 employers (11 from each region), 14 accounting graduates, 16 graduate students, and 17 undergraduate students. To contextualize survey responses, we conducted semi-structured follow-up interviews with 12 participants across both regions. These interviews explored themes such as implementation barriers, perceived risk of professional displacement, and firm-level change management strategies. Transcripts were anonymized and thematically coded to complement and enrich the survey findings.

Participation was voluntary, confidential (though not anonymous), and uncompensated. Unique survey codes were used to track response rates while protecting individual privacy. The final response rate was 35%, which aligns with professional norms for practitioner-oriented research (Baruch & Holtom, 2008). Institutional Review Board (IRB) approval was obtained through Cal Poly Humboldt prior to data collection.

Analytic Framework

Quantitative analysis used Chi-Square Tests of Independence for categorical (“Yes/No”) responses and Kruskal–Wallis tests for ordinal Likert-scale items, with an alpha level of 0.05. Standardized residuals were examined to identify subgroup deviations contributing to significant omnibus results. Given the modest and uneven subgroup sizes common in employer-focused

education studies, statistical results were interpreted directionally, emphasizing comparative patterns over inferential generalization.

To enhance both analytical depth and external validity, we triangulated survey and interview data with an environmental scan of numerous AI-enabled accounting tools. This scan documented product functionality (e.g., reporting, fraud detection, scenario modeling), pricing tiers, and platform interoperability (e.g., with QuickBooks, Xero, NetSuite). This integrative approach enabled us to distinguish between perceptual gaps (e.g., confidence or awareness) and structural barriers (e.g., system integration or cost), thereby situating our findings within the evolving ecosystem of accounting technology.

Research Objectives

The overarching goal of this study was to assess how AI-related competencies, expectations, and adoption patterns differ across the accounting education-to-practice continuum, particularly within small and mid-sized firms. Our two central research questions were as follows:

1. *How do perceptions and uses of AI differ across the accounting education-to-practice continuum?*
2. *What do these differences reveal about curricular alignment and professional readiness?*

By grounding our inquiry in regional labor markets that shape both hiring practices and educational pathways, this study provides an empirically grounded view of the challenges and opportunities associated with AI transformation in the accounting profession.

AI Technology Use Cases

In recent years, the application of artificial intelligence (AI) within the accounting profession has transitioned from conceptual exploration to practical integration. We identified over 50 commercially available AI-enabled accounting tools as of 2025, representing a diverse range of functional domains, price points, and integration strategies. The evidence reveals a maturing market characterized by modular, cloud-based solutions that are reshaping accounting operations across firms of all sizes. The evidence indicates that AI in accounting has moved beyond experimentation to practical integration, but the most durable advances are

organizational rather than purely technical. A central implication, underscored in practitioner guidance, is to treat AI as a productivity instrument that accelerates production of long-standing CPA work products (financial statements, tax returns, budgets, supporting workpapers), rather than as an end in itself. In other words, technology is an enabler of accuracy, timeliness, and efficiency, not a substitute for professional deliverables or judgment. Adopting an "investment" mindset, asking whether a tool measurably reduces cycle time, error rates, and rework on specific outputs, helps small and mid-sized firms prioritize implementations that compound value and avoid tool-chasing.

Universe of AI embedded Accounting Solutions

Transaction processing (AP/AR/expenses)

Inventory of tools (e.g., Tipalti, Bill.com, AppZen) aligns with high-volume, document-heavy workflows using Optical Character Recognition and policy engines remove manual touchpoints. Inputs are semi-structured and rules are explicit, AI reliably compresses cycle time and reduces exception rates.

Audit and assurance

Platforms such as MindBridge and DataSnipper illustrate a broader shift. Population-level testing plus explainable surfacing of anomalies to support practitioner skepticism. The tools are used to augment human judgment. Firms pair model outputs with documentation practices that make selections, thresholds, and rationales auditable (e.g., SHAP-style explanations, standardized workpaper links). This is consistent with the industry's intent to keep human review central to assurance work.

Financial planning and analysis (FP&A)

Driver-based models and scenario engines (e.g., Workday Adaptive, Jirav, Cube) reflect a second arc that AI advances from automation to advisory augmentation. Natural-language interfaces and narrative generation help translate models into decision-useful stories, which entails instituting version control, model documentation ("model cards"), and role-based permissions so that forecasts are reproducible and attributable.

Within-stack enablement (Excel and Office)

Treatment of Excel's "Analyze Data" and early Copilot capabilities illustrates a pragmatic path for small firms. Start where staff already work. Embedding AI at the sheet/document level (for exploratory analysis, charting, draft language, or formula help) lowers switching costs and focuses benefits on recognized outputs. Incremental adoption inside incumbent tools often yields higher realized productivity than wholesale platform replacement.

Research, summarization, and knowledge work

For tax, GAAP, or SALT monitoring, and for drafting memos, controls narratives, and client communications, conversational systems (e.g., ChatGPT) can be used with disciplined prompt scaffolds, curated follow-ups, and a reusable prompt library. This "copilot for knowledge work" supports consistency and throughput in tasks that remain irreducibly human in judgment. In 2025, Intuit announced a multiyear, $100 million partnership with OpenAI to integrate ChatGPT's models across its financial platforms, including TurboTax, QuickBooks, and Credit Karma. The collaboration combines Intuit's proprietary financial data and domain expertise with OpenAI's advanced language models, enabling users to interact conversationally for personalized tax guidance, cash-flow forecasting, and financial insights. This partnership positions Intuit as an AI-driven financial platform and establishes ChatGPT as an intelligent interface for real-time financial decision-making (Reuters, 2025; Financial Times, 2025).

Our analysis suggests that effective implementation of generative AI in small and mid-sized accounting firms should follow a set of practical heuristics aligned with operational efficiency and control. First, firms should adopt a "productivity-first" approach by beginning with core deliverables, such as the monthly close, audit testing, or SALT memoranda, and identifying where delays or errors are most concentrated. AI tools should then be introduced selectively to address these bottlenecks, ensuring measurable improvements and avoiding solution drift. Second, firms should prioritize maximizing existing technologies, particularly office suites (e.g., Excel, Word) and ERP/GL systems (e.g., Dynamics 365, QuickBooks, Xero), as familiarity and system compatibility often yield higher realized returns than adopting new platforms. Third, standardizing prompts and workflows through role framing, shared prompt libraries, and structured outputs can transform AI usage into repeatable internal controls. Additionally, firms should avoid redundant applications, particularly as AI capabilities become embedded within existing software ecosystems. Finally, organizations must institutionalize

governance guardrails, including restrictions on proprietary data input, documentation of model limitations, and mandatory human review, to ensure accountability and auditability.

Successful deployment of AI in accounting depends heavily on ecosystem compatibility. Tools offering native integrations with dominant general ledger (GL) and enterprise resource planning (ERP) platforms, such as QuickBooks, Xero, SAP, and NetSuite, are better positioned for adoption. Similarly, connectivity with communication and workflow platforms like Slack, Microsoft Teams, and Zapier enables real-time exception handling and collaborative decision-making. Open APIs and standardized connectors are increasingly emphasized by vendors, signaling a market preference for interoperability over closed-system intelligence. This modularity reduces the implementation burden and supports hybrid system architectures wherein AI tools function as intelligent layers atop existing accounting infrastructure.

Contrary to perceptions of AI as cost-prohibitive, we find that most AI-enabled tools fall within affordable subscription tiers. Among products with disclosed pricing, the median monthly cost was approximately $125, with over 70% priced below $200 per month. This cost structure aligns with the economic constraints of small to midsized accounting practices, offering an incremental adoption path without necessitating full-scale ERP migration. Higher-cost tools, such as enterprise governance, risk, and compliance (GRC) platforms or industrial asset management systems, tend to reflect broader deployment scopes and integration complexity. However, the presence of tiered pricing and modular functionality allows firms to scale adoption in line with capacity and strategic priorities.

Big 4 Accounting Firm AI Investments

In 2025 and beyond, the major professional services firms often referred to as the “Big Four” (Deloitte, PricewaterhouseCoopers [PwC], Ernst & Young [EY], and KPMG) are pivoting strategically from deploying AI primarily to optimize internal efficiency toward offering deep-value AI services and assurance to their clients. This evolution reflects not only a technological shift, but a redefinition of core competencies and service delivery models across the global accounting profession.

For instance, KPMG’s mid-2025 launch of its multi-agent AI platform “Workbench” underscores a global ambition to infuse its audit, tax, and advisory workflows with generative-

agent capabilities and to enable direct client delivery of AI-augmented insights (KPMG, 2025). Designed as an enterprise-grade system, Workbench integrates large language models (LLMs) with proprietary audit methodology, extending from internal decision support to external assurance deliverables.

Deloitte, meanwhile, has invested heavily in its "Greenhouse AI Studio", an innovation lab that combines generative AI, human-centered design, and client co-creation methodologies to solve complex business problems. Deloitte's "PairD" initiative, a generative AI tool embedded into professional workflows, has been deployed to thousands of practitioners globally, assisting in summarizing accounting standards, drafting memos, and preparing client-ready communications (Deloitte, 2024).

Ernst & Young (EY) has announced over $1.4 billion in global technology investments over three years, with a significant allocation toward AI initiatives. Its EY.ai platform integrates internal and client-facing systems to embed AI into audit and tax compliance functions. EY has also become a first-mover in piloting AI governance audits, offering clients assurance over the ethical and regulatory compliance of their AI systems, mirroring the trajectory of ESG assurance (EY, 2024).

PwC has likewise committed over $1 billion toward AI transformation, emphasizing both proprietary tool development and strategic partnerships. Its secure generative AI assistant, ChatPwC, is already embedded in daily workflows, while collaboration with Microsoft and OpenAI supports further integration of Copilot tools across audit and tax platforms. The firm's AI Assurance Framework helps evaluate fairness, accountability, and transparency of client AI systems (PwC, 2023).

These initiatives demonstrate how the Big Four are not only embedding AI into their own practices, but also shaping the regulatory and assurance frameworks by which AI will be evaluated in enterprise contexts. Their dual role, as developers and auditors of AI systems, positions them uniquely within the evolving AI governance ecosystem. Importantly, the scale, scope, and nature of AI investments by the Big Four reflect their substantial resources, including proprietary data, technical expertise, and global infrastructure. These capabilities enable the development of in-house AI platforms that are tailored to firm-specific methodologies and quality controls. In contrast, small and medium-sized firms (SMPs) typically lack the capital and

workforce to create customized systems. Instead, they rely on third-party applications, such as MindBridge, CaseWare, or QuickBooks AI tools, which offer generalizable AI functionality but limited customization and transparency (ACCA, 2023). This reliance creates asymmetries not only in technology access but also in professional liability and quality assurance.

Thus, the Big Four's capacity for vertically integrated AI development is not simply enhancing efficiency; it is actively reshaping the future of accounting professionalism and redefining what constitutes assurance in the age of algorithmic decision-making. From a scholarly perspective, several themes emerge. First, the Big Four's investment in internal AI platforms signals a transformation in the role of junior and mid-level professionals. KPMG publicly states that junior consultants will shift from slide-deck preparation toward managing teams of AI agents, thereby elevating their advisory role and accelerating career trajectories. Second, the firms' move into AI assurance reflects recognition of the auditing profession's evolving scope. In essence, expanding from financial statements and disclosures to algorithmic systems, model governance, and embedded enterprise intelligence. This aligns with broader regulatory and institutional pressures surrounding AI transparency, explainability, and trust. Third, while automation remains important, the current inflection is less about cost-cutting and more about creating scalable platforms, smart augmentation and recurring advisory revenue streams; the Big Four now view AI as both a catalyst for internal transformation and a client-service differentiator.

For educators and accounting researchers, these developments signal that graduates will likely enter a profession where not only tools are changing, but the very nature of assurance, advisory, internal controls and workflow orchestration is advancing rapidly; thus reinforcing the imperative for curricula that embed AI literacy, model-governance awareness, and client-value orientation.

Survey Results - Adoption of Generative AI Tools

Having examined the evolving landscape of artificial intelligence (AI) applications and tools relevant to the accounting and assurance professions, it is essential to consider how these technologies are being perceived and adopted in practice. While the preceding discussion highlighted the technical capabilities and limitations of various AI systems, including their potential to enhance efficiency, accuracy, and analytical depth, understanding their real-world

impact requires insights from those who engage with them directly. To that end, the following section presents the results of our online survey of accounting and auditing practitioners, which explores current usage patterns, levels of trust, perceived risks, and readiness to integrate AI-driven solutions within professional workflows.

Table 1. Summary of Key Statistical Results

Construct	**Test***	**Statistic**	**p-value**	**Significance**	**Interpretation**
Use of GenAI tools	χ^2	10.06	0.039	**Significant**	Higher adoption among professionals
AI creates jobs	χ^2	23.30	<.001	**Significant**	Professionals optimistic; students cautious
Importance of AI knowledge	H	8.58	0.072	Marginal	Slight student–employer divergence
AI enhances reporting	χ^2	7.89	0.096	Marginal	Shared belief in benefits
AI aids fraud detection	χ^2	3.10	0.541	NS^	Universal agreement
AI replaces jobs	χ^2	2.93	0.569	NS^	Moderate perceived risk
Use of non-GenAI tools	χ^2	6.85	0.144	NS^	Low adoption overall
Confidence in AI accuracy	H	4.81	0.307	NS^	Moderate confidence across groups

*χ^2 (Chi-square test) ; H (Kruskal–Wallis H test) ; ^ Not significant

Use of Generative AI Tools

Table 2 presents the distribution of generative AI tool usage across respondent groups, highlighting differences in adoption rates among students, graduates, and employers. A chi-

square test of independence indicates a statistically significant relationship between respondent type and AI use ($\chi^2(4) = 10.06$, $p = .039$), suggesting that adoption is not uniform across groups. The table reports the percentage of respondents indicating AI use, along with standardized residuals to identify which groups deviate from expected frequencies. These findings suggest a diffusion-of-innovation pattern (Rogers, 2003) wherein workplace exposure drives adoption, while academic contexts lag due to limited access and institutional privacy restrictions. This aligns with prior research showing that professional accounting firms are early adopters of AI relative to educational institutions (Ross & Zhang, 2025).

Table 2. Use of Generative AI Tools by Respondent Group

Respondent Group	**% Yes**	**Std. Residual**	**Interpretation**
Accounting Graduates	83.3%	+0.91	Higher than expected
Alabama Employers	70.0%	+0.42	About as expected
California Employers	81.8%	+0.80	Higher than expected
Graduate Students	43.8%	–0.95	Lower than expected
Undergraduate Students	38.5%	–1.09	Lower than expected

($\chi^2(4) = 10.06$, $p = .039$ — significant at $p < .05$)

Enterprise benchmarks show the same exposure-driven pattern observed in our data. By Q3-2025, 42% of organizations reported agents in production and 55% were piloting; adoption clustered first in Technology/IT (95%) and Operations (89%), with Finance (analysts, controllers) at 45% and Risk at 66%, functions where practitioners in our sample are most likely to encounter GenAI at work. Leaders increasingly favor hybrid “build-and-buy” approaches (57%), and report falling workforce resistance as hands-on enablement expands (e.g., agent sandboxes, “agent-shadowing,” prompt-skills training). These conditions plausibly explain why professionals in our study report higher use than college students and graduates, whose access is constrained by institutional privacy and tooling. Perplexity’s (2025) synthesis further underscores practitioner-led diffusion. Firms report material gains from cognitive RPA and

continuous-close tooling, with AI applied to high-volume tasks first and then extended to advisory contexts, an adoption arc that privileges workplace exposure over classroom familiarity.

Perceived Benefits - Fraud Detection and Financial Reporting

Belief That AI Will Create New Job Opportunities

The strongest divergence among groups emerged in beliefs about AI's potential to create new accounting jobs.

Table 3. Belief That AI Will Create New Job Opportunities

Group	**% Yes**	**Std. Residual**	**Interpretation**
Accounting Graduates	41.7 %	–1.22	Lower than expected
Alabama Employers	94.7 %	+1.20	Higher than expected
California Employers	100 %	+1.12	Higher than expected
Graduate Students	75%	+0.17	About as expected
Undergraduate Students	33.3 %	–1.56	Lower than expected

($\chi^2(4) = 23.30$, $p < .001$ — significant)

Professionals and employers were overwhelmingly optimistic, viewing AI as a driver of new analytical and advisory roles. In contrast, students and recent graduates expressed skepticism, fearing automation may limit entry-level opportunities. This divergence highlights a perception gap. Those with direct exposure to AI implementations recognize emerging opportunities in governance, data strategy, and systems assurance, while those still in training primarily anticipate displacement.

Professionals' strong optimism in our data maps closely to enterprise hiring signals. 18% of organizations report changed entry-level hiring already, 56% expect changes within 12 months, and firms anticipate new roles, such as prompt engineer, data curator, governance specialist, ethics officer, AI product manager (Perplexity, 2025). The skill profile tilts toward critical thinking, industry knowledge, adaptability, and role-specific expertise, precisely the domains professionals in our study view as complementary to AI. From an educational perspective, this finding calls for a reframing of AI narratives in the classroom, from "job loss" to "role evolution," emphasizing how AI enables higher-order judgment and client engagement.

Perceived Importance of AI Knowledge and Confidence in Outputs

Respondents rated the importance of AI knowledge moderately to high across all groups (means = 2.36–3.54), though differences were not significant ($H(4) = 8.58$, $p = .072$). Students rated AI literacy slightly higher than employers, perhaps reflecting exposure to current discourse emphasizing digital fluency as a core competency. Confidence in AI accuracy was moderate and uniform (means ≈ 2.5–3.1), with no significant group differences ($H(4) = 4.81$, $p = .307$). This cautious confidence parallels professional concerns regarding model bias, explainability, and audit reliability. The accounting community's skepticism is thus measured rather than dismissive, reflecting an awareness of both AI's potential and its limitations.

AI Enhances Financial Reporting Accuracy

Our survey data suggest a broadly shared belief across respondent groups that AI enhances financial reporting, although the differences are only marginally significant ($\chi^2 = 7.89$, $p = .096$). Because the p-value exceeds the conventional .05 threshold, there is insufficient evidence to conclude that perceptions differ meaningfully by group. The marginal significance may point to slight variation, potentially with professionals expressing somewhat stronger agreement than students, but overall, perceptions appear relatively consistent across the sample, reinforcing the view that AI's value in financial reporting is widely recognized. These findings echo professional guidance from the AICPA (2023), which emphasizes AI's role in ensuring accuracy and continuous assurance in reporting.

Areas of Agreement

The non-significant results across several constructs suggest a notable degree of consistency in perceptions of AI across respondent groups, even where descriptive differences are present. First, support for AI's role in fraud detection and prevention is uniformly high, ranging from 81% to 100%, with no statistically significant differences ($\chi^2(4) = 3.10$, $p = .541$). This indicates a shared recognition of AI's value in core auditing functions such as anomaly detection, pattern recognition, and predictive analytics. The lack of variation reinforces the view that AI's application in fraud detection is widely accepted across both academic and professional contexts.

Similarly, perceptions of AI-driven job displacement, while somewhat varied in magnitude (61.9% to 81.8% agreement), do not differ significantly across groups ($\chi^2(4) = 2.93$, $p = .569$). This suggests that concerns about job replacement are broadly moderate and do not systematically depend on respondent type. Although students may exhibit slightly higher levels of concern, the absence of statistical significance implies that these differences are not strong enough to indicate meaningful divergence. Overall, respondents appear to view AI more as a tool that augments professional tasks rather than one that eliminates roles entirely.

Finally, reported use of non-generative AI tools, such as robotic process automation and machine learning, remains relatively low across all groups, with no significant differences observed ($\chi^2(4) = 6.85$, $p = .144$). While professionals report slightly higher usage, the overall pattern suggests that adoption beyond generative AI is still in an early stage. Taken together, these non-significant findings indicate that, despite differences in experience and exposure, respondents share broadly similar attitudes toward AI's capabilities, risks, and current level of integration in accounting practice.

The findings reveal a clear divide between professionals and students in both the adoption and perception of AI in accounting. Generative AI use is significantly higher among practitioners, supporting a workplace-driven diffusion pattern, while students lag due to limited exposure. The most pronounced difference emerges in beliefs about job creation, with employers overwhelmingly optimistic and students more skeptical, highlighting a perception gap shaped by experience. Despite these differences, there is broad consensus across all groups regarding AI's benefits, particularly in fraud detection and financial reporting, and moderate, uniform

confidence in its outputs. Concerns about job displacement are present but not significantly different, suggesting AI is generally viewed as augmentative rather than substitutive. Additionally, adoption of non-generative AI tools remains low across all groups, indicating that broader AI integration is still developing. Overall, the results point to shared recognition of AI's value alongside meaningful differences in exposure and expectations.

Integrative Interpretation

This study identifies an asymmetric diffusion of generative artificial intelligence (GenAI) across the accounting education-to-practice continuum. Adoption rates are significantly higher among employers and recent graduates working in professional settings than among current students. This discrepancy is consistent with the realities of professional practice, where organizational infrastructure facilitates supervised experimentation and integration of GenAI tools. These findings align with evidence from KPMG's AI Quarterly Pulse Survey, which reports that a majority of enterprises now operate AI agents in either production or pilot phases, with a strategic shift toward hybrid build-and-buy deployment models. These implementations are most concentrated in IT and operations functions, followed by finance and risk. Both areas where early-career accountants are likely to engage directly with AI-augmented workflows.

Perceived benefits observed in the study, particularly in fraud detection and financial reporting accuracy, reflect broader enterprise priorities. According to KPMG, organizations are formalizing AI governance through human-in-the-loop oversight, access restrictions on sensitive data, and risk frameworks that emphasize trust and explainability. At the same time, traditional performance metrics are proving inadequate for capturing AI's value contribution, prompting calls for compressed ROI timelines and refined key performance indicators. These dual pressures, on oversight and measurable returns, are reflected in our respondents' simultaneous optimism about GenAI's potential and caution regarding its current limitations. Notably, professional respondents display stronger confidence in AI-generated outputs than students, suggesting that institutional exposure plays a key role in shaping perceptions of trust and utility.

The workforce implications of these findings are equally significant. Organizations are actively enabling AI readiness through training strategies such as sandboxing, prompt-engineering tutorials, and "agent-shadowing." Entry-level hiring expectations are evolving accordingly, with employers prioritizing not only technical proficiency but also critical thinking,

industry-specific knowledge, adaptability, and judgment in evaluating AI outputs. These emerging demands reinforce the need for curricular reform that supports AI fluency while embedding assurance and governance principles into technical and applied coursework. A tiered model, combining foundational AI literacy, hands-on analytics, and governance-oriented modules, offers a promising framework for aligning accounting education with the evolving needs of the profession.

Looking ahead, practice-facing literature suggests that early-career accounting work will increasingly engage with continuous audit analytics, explainable machine learning models for assurance, and generative forecasting tools that support scenario planning. These developments underscore the urgency of equipping students not only with tool-specific knowledge but also with the evaluative and ethical competencies required to function effectively within AI-augmented accounting systems. Collectively, the results imply a multi-tiered model of AI integration in accounting curricula:

1. Foundational exposure by introducing AI concepts and ethical frameworks in early coursework.
2. Applied analytics training by integrating supervised GenAI use into auditing, tax, and reporting courses.
3. Governance and assurance modules by training students to evaluate AI accuracy, bias, and control systems.

Such curricular scaffolding can reconcile professional expectations with educational readiness, preparing graduates for roles that demand technological fluency and professional skepticism.

Discussion and Conclusion

The study reveals a profession united in its recognition of AI's potential but divided by exposure and optimism. Professionals are already integrating AI and foresee job creation, while students, less exposed to AI tools, remain cautious. Yet both groups share moderate trust in AI outputs and strong belief in its analytical benefits. These findings position accounting at a transitional inflection point. The field is shifting from conceptual acceptance to operational assimilation of AI. To maintain alignment between education and practice, accounting educators

must emphasize critical AI literacy, ethical judgment, and adaptive learning rather than static tool mastery. As Holmes and Douglass (2022) argue, accounting education faces an “epistemological shift” in which AI is both a collaborator and a disruptor. The challenge is not whether to teach AI, but how to ensure that the next generation of accountants can both leverage and oversee intelligent systems with integrity.

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Preservice Teachers' Experiences of Using AI for completing Class Assignments

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Abstract

This study was conducted to understand the experiences of entry-level education course students of using Artificial Intelligence (AI) for completing class assignments. Participants were required to use AI apps such as ChatGPT, ChatSonic, Google Bard (now Gemini), Perplexity and You.com for completing class assignments. Out of eighteen students enrolled in the course, twelve students provided consent and participated in the study. Data for the study was collected through an open-ended online survey. Findings included feelings about using AI for completing class assignments, recognition of important skills needed to utilize AI, benefits and concerns of using AI, preferences regarding the AI apps used, and comparison of using AI apps with search engines such as Google and Bing.

Key words: Artificial Intelligence, class assignments, college students, pre-service teachers

Introduction

In recent years, AI has drawn a lot of attention in all fields and education is no exception. Just as any new technology, AI has also generated excitement and hype about its potential impact and revolutionary changes (Okaiyeto et al., 2023). It has provided opportunities for innovative and efficient teaching and learning experiences. Users can now obtain information in response to prompts or queries much more quickly than ever before. Prior to AI, online information was mostly obtained through search engines such as Google, Yahoo, Bing, DuckDuckGo etc. AI has made access to online information not only quicker but also straight forward. Moreover, AI possesses greater autonomy in interpreting data, determining learning, and sometimes even making instructional decisions, in contrast to educational technologies that just operate as mediators between instructors and students (Seo et al., 2021). Due to the rapid advancement of AI, it is crucial to comprehend how it operates and how it impacts our daily lives (Lee & Perret, 2022). Educators must teach students how to implement this technology responsibly and have a balanced viewpoint on its advancement and acceptance (Okaiyeto et al., 2023). AI research in education is still in the preliminary stages and limited research exists especially related to preservice teachers. The purpose of this qualitative study was to understand the experiences of using AI from the perspectives' of preservice teachers.

Literature Review

AI has allowed opportunities for innovative and efficient teaching and learning experiences. While the benefits of using AI are obvious, educators must set guidelines to make sure students learn how to use it ethically and effectively. They must also

consider the challenges and limitations when evaluating the potential impact of this rapidly emerging technology. Boubker (2024) conducted a study to examine the impact of ChatGPT on learning experiences of students and their perception of using this AI. It was concluded that the use of AI was beneficial and positively influenced the participants' learning processes. However, it was suggested that teachers should caution students about the challenges and guide them on how to use AI ethically. Seo et al. (2021) examined the positive and negative impacts of AI on interactions between learners and instructors in online education. Positive impacts included AI's ability to enhance communication, provide support to meet individualized learning needs and foster a sense of connection between students and instructors. Negative impacts included concerns regarding responsibility, surveillance and privacy issues.

Slimi (2023) examined the impact of AI in higher education and concluded that AI is a beneficial tool but there are concerns regarding unethical use and dependence. Vashista et al. (2023) explored the impact of AI from the perspective of educators and found that there are potential benefits of AI in improving teaching effectiveness, promoting student engagement and informing instruction. However, participants did have ethical concerns and emphasized the need for continuous professional development and collaboration among educators, educational institutions and AI developers to responsibly integrate AI while preserving education quality and human engagement. Nazaretsky et al. (2022) examined how teachers can trust AI and use it as a tool to strengthen their courses. They found that providing teachers with explanation of how AI makes decision and complement and enhance teachers' strengths rather than replacing them can reduce their concerns and improve their trust in AI.

AI has also enabled customization and personalization for improved student learning experiences (Chen et al., 2020). It has allowed educators to tailor instruction to meet unique learning needs and preferences of students (Okaiyeto, 2023). Additionally, it can also help with educational decision-making, improve student-teacher engagement, and personalize student feedback (Seo et al., 2021). Tapalova and Zhiyenbayeva (2022) also found that AI helps with engagement and customization of learning. However, the authors did highlight the ethical concerns of AI and its impact on digital learning. Although AI has the potential for facilitating adaptive and personalized learning but may affect social adaptability of adolescents that may decrease social interactions among students and may make them too reliant on technology-mediated communication (Lai et al., 2023). AI has also been helpful in improving literacy skills of students. Chang et al. (2024) found that the use of ChatGPT enhanced students' critical thinking and problem solving skills. In addition it also made learning more enjoyable to students. Kazu and Kuvvetli (2023) found that pronunciation practice using AI helped students retain the vocabulary words longer in memory.

Since the rise of AI in education, researchers have conducted several studies in various fields from the perspectives of teachers and students. Nevertheless, it appears that not much research has been done to learn about college students' experiences utilizing AI to complete class assignments, particularly preservice teachers. Thus, the purpose of this study was to examine the use of AI from the perspective of preservice teachers.

Methods

This qualitative research was conducted with education major students enrolled in an undergraduate introductory education course at a university in the south. Students were required to choose five topics from the assigned text book and answer some questions related to those topics using information provided in the textbook. They also had to use AI apps such as ChatGPT, ChatSonic, Google Bard (now Gemini), Perplexity, and You.com to get that information. Each topic was aligned with a particular AI app. They then had to compare the information from both the sources.

At the end of the semester, they had to complete an open-ended online survey to share their experiences regarding the use of the AI apps. Prior to data collection, all 18 students enrolled in the course were provided information about the research including the informed consent. The survey link was sent to all 18 students in the course and 12 students completed the survey. The survey had the following questions:

1. What were your initial feelings about AI?
2. How do you feel about using AI for completing class assignments?
3. Should educators let students use AI for completing assignments? Why or Why not?
4. What skills are necessary when using AI?
5. What are the similarities and differences between AI and search engines such as Google, Bing etc.?
6. Which of the following was your favorite AI app and why?
    a) ChatGPT
    b) Chatsonic
    c) Perplexity
    d) You.com
    e) Google Bard (now Gemini)

Data was analyzed through the deductive qualitative analysis approach using predetermined themes. Predetermined codes or themes might be generated as strictly organizational tools, or they can be constructed based on ideas developed by the researcher or taken from theory, literature or other sources (Bingham, 2023). For this study, the themes were developed based on the questions used for the study. Some questions were combined before forming the themes. For example, questions 1, 2, and 3 were combined to form the theme named “Views and Feelings about using AI”. Each theme was first defined and then the relevant quotes were added to the theme. Here is an example of how the data was analyzed.

Theme: Skills for using AI

Definition: Quotes that implied skills necessary for using AI

Quotes: “Making sure you have good, detailed question to ask, so you get the right answer”. “I believe the most important skill that is needed when using AI is reading skills”. “Another important skill is to know what information, provided by the AI program, is necessary for the assignment or task that is being completed”.

Trustworthiness

The credibility and confirmability of this research was established by keeping an audit trail documenting every aspect of the research from start to finish and providing quotes from the participants to support the themes (Cope, 2014). Transferability was established by providing detailed description of the research process including participant selection, data collection, and data analysis (Cope, 2014).

Ethics and Consent

This research was approved by the university Institutional Review Board. Participants were made aware of the research and had to provide consent prior to data collection. The survey was anonymous to protect the privacy and confidentiality of the participants.

Results and Discussion

Here is a detailed description of the four themes supported by direct quotes from the data.

Preferred AI Apps

Among the five AI apps that the participants were required to use, the most preferred app was Perplexity followed by ChatGPT and You.com. Their preference depended on several reasons such as functionality, ease of use, lack of account requirements and availability of detailed information with citations. Participants who preferred Perplexity were very happy with not only the information obtained from the prompts but also with the sources from where the information was derived along with videos and images relevant to the prompt. Perplexity also provided more information related to the prompt or the topic searched. Here are some quotes from participants that support this theme. “My favorite is Perplexity because it gives citations and it goes into details.” My favorite was You.com because it ran more smoothly than the others and it didn’t make [me] create an account to use it.”

Skills for using AI

Participants emphasized the importance of having proper reading, writing, comprehension, and analytical skills when using AI. They noted that in order to receive best and accurate results, it is important to type in clear prompts. They also mentioned that it is necessary to have adequate comprehension skills to make sense of the information obtained from AI and to identify if the information was correct or incorrect to make judgment before using it. Here are some quotes to support this theme: “Making sure you have good, detailed question to ask, so you get the right answer”. “I believe the most important skill that is needed when using AI is reading skills”. “Another important skill is to know what information, provided by the AI program, is necessary for the assignment or task that is being completed”.

Feelings and views about using AI

When asked about their feelings regarding the use of AI for class assignments, participants had mixed feelings. They recognized that AI was very helpful in generating ideas and providing extra knowledge really fast. However, they also had concerns about plagiarism, becoming too dependent on AI and using it as a shortcut. Overall, participants felt that AI is a helpful tool but also said that using your own knowledge and thinking skills is crucial. Here are some quotes to support this theme: “I like using it to complete assignments because it can give extra knowledge on a topic”. “AI is there to present me with information, but I don’t want to become dependent upon it”.

When asked if educators should let students use AI for completing assignments, the participants had differing views. Some participants felt that AI is a valuable resource

for supporting learning while others felt that students should not be allowed to use AI because students should learn how find information themselves and not rely on AI. Some indicated that AI can be a great tool for research projects and can help students with better understanding of the content and how to apply the knowledge but educators must be aware of the risks of letting students use AI. Here are some quotes to support this theme: “I think that it’s [AI] a good tool to use along with what is being taught in class but it should not overshadow it”. “I think educators who allow students to use AI are looking for ways to assist their students achieve better understanding”.

Search Engines and AI: Differences and Similarities

Based on the responses, AI generated immediate, specific, personalized and detailed content related to the prompts or topics as opposed to search engines that only provide links and relevant sources to find answers. They also mentioned that AI actually provides direct answers to the prompts or topics whereas search engines such as Google or Bing provide links to explore for answers. Also, the information provided by AI is easier to navigate and understand because it provides direct answers in paragraphs as opposed to search result links provided by Google or Bing. AI also saves time by providing results immediately whereas exploring search results from Google or Bing is time consuming. Here are some quotes to support this theme: “When using search engines, they don’t necessarily give you an exact answer they give you websites that could potentially give you the answer, whereas AI gives you an answer and then gives you the source after that”. “When you ask AI a question it gives you the answer right away whereas on search engines you have to look through different websites before you can get the answer”. When asked about similarities between AI and search engines

participants noticed that both have a common purpose which is to help search information and provide answers to questions. They both provide results based off of what is entered in the form of prompt, topic, or question. Here are some quotes to support the theme: “One major similarity that I noticed between AI programs and search engines is that both of them are helpful resources because lots of information can be found by using technology when ideas are needed for specific tasks”.

Conclusion

Overall, it can be concluded that Perplexity was the most favored app among the participants due to its features, usability, lack of account requirements, and ability to provide detailed information with sources and extra information. They also highlighted the importance of literary and analytical skills for effective and accurate AI outcomes. While participants accepted the benefits of AI in generating quick ideas, they had concerns regarding over-reliance and plagiarism emphasizing a balance between AI support and independent thinking. These findings coincide with the findings from the study conducted by Slimi (2023). Opinions regarding whether or not educators should allow students to use AI for assignments were varied. Some supported the use of AI in enhancing learning experiences, while others had concerns against encouraging reliance. Nonetheless, there was general agreement that educators need to be aware of the potential drawbacks associated with AI integration. Comparing AI with search engines such as Google and Bing, participants noted AI’s ability to instant, personalized, and detailed responses, highlighting its efficiency in navigating and understanding information than just search results for further navigation. However, they agreed on the

shared objective of both AI and search engines in retrieving information based on prompts or search topics.

Limitations and Recommendations

This study only looked at students majoring in education and was only restricted to one university. Hence, the results may differ for students from other universities and other disciplines. Given that this study only had 12 participants, it might be helpful to compare the results with a larger sample size in order to identify any differences or similarities. Also, this study was only from the perspectives of students. In order to better inform teaching and learning, future research from the viewpoint of instructors would be more helpful. In spite of the limitations, it is worth mentioning that this study provides valuable information regarding the research design that can be applied when conducting future such research with a larger sample size.

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Culturally Responsive Parent–Teacher Communication: Implications for Student Success in Elementary School Settings

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Abstract

Parent-teacher communication is a key concept in helping students to achieve success in elementary school. With a growing school diversity in terms of cultural and linguistic diversities, the conventional communication methods might not suit all families. The paper is a research-based literature review to explore the culturally responsive parent-teacher communication, and its connection to academic success, behavioral performance, and the overall student development in elementary school environments. The review centers on the communication practices that acknowledge cultural backgrounds, languages and lived experiences of the family as important resources in the learning process. As noted in the reviewed literature, culturally responsive communication leads to a number of advantages, such as developing better trust between families and schools, better parent involvement, and positive implications on student engagement and performance. Additionally, the study presents obstacles that may impede effective communications, including language barriers, cultural misconceptions, power disparities, and insufficient preparation of teachers in culturally responsive practices. Variations in school backgrounds and family also determine the ways in which communication strategies are adopted and encountered. This review is aimed at giving a balanced perspective of the strengths and limitations of culturally responsive parent teacher communication in elementary education without promoting one side or the other.

Keywords: culturally responsive communication, parent–teacher partnerships, family engagement, elementary education, student success

Culturally Responsive Parent–Teacher Communication: Implications for Student Success in Elementary School Settings

Parent–teacher communication is an important part of elementary education. Interpersonal communication between schools and families facilitates learning, behavior, and social development of students through the establishment of mutual expectations and understanding. When parents and teachers interact in a clear and consistent manner, students might have a higher chance of continuity between the school and home settings (Epstein, 2018). However, the same communication practices that are effective in some families might not be effective in others, especially in culturally and linguistically diverse school communities.

In the United States, elementary schools cater to families with diverse cultural, linguistic, and socioeconomic backgrounds. Those differences may influence the perception of families on education, their contact with schools, and their attitude to teacher communication (Baquedano López et al., 2013). Families will feel excluded or misunderstood when communication fails to consider cultural values or language requirements. This has led to the consideration of culturally responsive parent-teacher communication as an area of growing interest in educational research and practice.

Culturally responsive parent-teacher communication focuses on honoring cultural knowledge, language, and experiences of families. This method considers families as collaborators and not passive receivers of information and acknowledges that successful communication is influenced by trust, mutual respect, and shared

responsibility (Mapp & Bergman, 2019). Studies indicate that families tend to interact meaningfully with schools when their teachers employ culturally responsive communication patterns, which can positively impact student achievement (Ilmi et al., 2024). Not in list

Culturally responsive communication has its challenges despite its potential benefits. There might be insufficient training of teachers to work with culturally different families and the schools might not have resources to facilitate multilingual communication. Communication efforts may also be complicated by structural barriers like time constraints and inequality in power relationships (Baxter and Kilderry, 2022). These issues point to the necessity of a close analysis of the benefits and shortcomings of culturally responsive communication practices.

The purpose of this paper is to review and synthesize existing research on culturally responsive parent–teacher communication in elementary school settings. This review addresses the effects of culturally responsive communication on student success, the prevalent themes and areas of conflict in this field, and the circumstances when communication is most effectively applied by reviewing peer reviewed literature.

Literature Review

Theoretical Foundations of Parent–Teacher Communication

In elementary education, there are several noteworthy theories that support parent-teacher communication and the way families and schools collaborate. One major framework is Epstein’s theory of school, family, and community partnerships, which explains that communication is a key part of strong relationships between schools and families (Epstein, 2018). This theory demonstrates that communication aids in teachers

and parents having common expectations regarding student learning and behavior. Families can help their children more when they are aware of the objectives of schools. It also makes parents more connected to the school.

This translates into communication being a normal and purposeful process rather than occurring only when there are problems. Moreover, the framework by Epstein describes how a continued communication builds trust within a period of time (Epstein, 2018). Trust enables families to approach teachers with ease. It also helps teachers to engage families in student learning. These concepts demonstrate why communication is at the core of family-school partnerships.

The second theory is the dual capacity building framework which aims at enhancing teacher and family communication abilities. This model clarifies that communication skills require the capacities of two parties and not a single one (Mapp and Bergman, 2019). Educators should be trained on how to talk to different families in a respectful and articulate manner. At the same time, families need support to understand school systems and expectations. Communication is more equitable when both parties are ready. This balance assists in forming more powerful partnerships. The framework also describes that schools should offer family members a chance to engage in communication (Ilmi et al., 2024). In the absence of these opportunities, families might experience marginalization. Communication between schools and families is more effective and inclusive when schools help both teachers and families.

The sociocultural theory is another factor that can be used to explain the parent and teacher communication. According to this theory, culture influences the manner in which individuals communicate and interpret messages. Depending on their cultural

backgrounds, families have various values, beliefs, and communication styles (Baquedano Lopez et al., 2013). In cases where the teachers are not aware of these differences, communication may cause misunderstanding. As an example, a family might like to communicate indirectly, whereas a school might want a direct answer. These variations may be confusing. But when teachers are aware of cultural forces, communication is easier and more respectful. Such awareness will avoid making negative assumptions. It also helps to improve the relations between families and teachers.

Culturally responsive communication is also supported by the idea of funds of knowledge, which emphasizes the strengths that families possess. The concept states that families possess valuable knowledge, which is determined by their life experiences (Figueras Daniel & Vasquez, 2024). When this knowledge is acknowledged by teachers, communication will be more meaningful and respectful. Instead of viewing families as lacking, teachers see them as important partners. This change enhances the way teachers relate with families. It also makes families become more open to share about their children. Combined, these theories serve as the reason behind the importance of culturally responsive communication in elementary schools.

Culturally Responsive Communication in Elementary Contexts

In elementary schools, culturally responsive communication can be defined as the one which respects and incorporates the cultural and linguistic background of the families. It has been elaborated in research that such communication assists in establishing better relationships between families and teachers (Banks et al., 2024). Teachers can modify their communication style when they know the family

backgrounds. This enhances effective communication. It also makes the families feel honored and part of the school. Consequently, families will be more open to engaging in school activities. This is particularly relevant in elementary schooling as young students rely on their teachers and families. Communication, which depicts cultural understanding, reinforces this system of support.

Language accessibility is a key part of culturally responsive communication. There are numerous non-English speaking families in elementary schools. When communication is only in English, families may not fully understand important information. Research shows that providing translation and using simple language improves communication (Blair & Haneda, 2021). This assists the families to know the expectations of the school and student development. It also minimizes confusion and frustration. Families clearly understand messages, which allows them to support their children. Furthermore, speaking the home language of families demonstrates that their identity is respected. This will contribute to better relationships between parents and teachers.

The communication between schools and families is also influenced by cultural values. The expectations of education and authority may vary in different families. The families might require teachers to take the lead in communication, and some might want to discuss it collectively. Studies indicate that awareness of these differences can assist educators to prevent misunderstandings (Madhlangobe & Gordon, 2012). Teachers can modify their communication mode when they are aware of expectations of different cultures. This facilitates easier interaction among families. It also helps teachers to

avoid making wrong assumptions about the family involvement. Teachers can learn various types of participation instead of perceiving the families as being disengaged.

Elementary schools embrace numerous communication channels, including meetings, phone calls, emails, and online sites. Studies indicate that the provision of alternative communication can address the needs of various families (Graham Clay, 2025). Communication flexibility will enable the families to decide what best suits them. This should be significant to families who have varied work hours or have low access to technology. However, research also explains that using many tools is not enough. Communication should still be respectful and culturally sensitive. Flexibility and cultural understanding are the two elements that make communication more effective in the elementary setting.

Benefits of Culturally Responsive Communication

There are a number of significant advantages of culturally responsive parent-teacher communication in the elementary education. Among the advantages is building trust between schools and families. Studies demonstrate that parents feel more valued when teachers interact with them in a manner that acknowledges their cultural backgrounds (Aguayo et al., 2025). Such a sense of respect helps families to become more open. It also assists in overcoming fear or reluctance to talk with teachers. With the increased openness of communication, family-school relationships become stronger. Good relationships enhance effective cooperation.

Moreover, researchers indicate that trust enhances the involvement of families in school-related activities (Mapp & Bergman, 2021). Families will feel more comfortable

attending meetings and being involved when they trust teachers. This engagement enables student achievement both at home and school.

The other advantage of culturally responsive communication is that it has an influence on academic outcomes. Studies show that families have a better idea about what students should learn when communication is clear and culturally appropriate (Zhang et al., 2011). With this knowledge, parents can facilitate home-based learning and homework. It also assists in building coherence between the expectations at home and school. With consistent support, students will learn better. Moreover, research indicates that when families are involved, students are more engaged in class (Haines et al., 2021). Participation keeps the students on track and motivated. This may result in improved performance in school in the long run.

Responsive communication based on culture also promotes positive behavior and social development. Studies indicate that teacher-family communication assists in handling student behavior issues at an early stage (Haines et al., 2021). Information sharing between teachers and parents helps teachers know more about the needs of students. This assists both parties in reacting equally to behavioral problems. Regular feedback saves confusion among students. It also assists students to acquire proper behavior. Moreover, the research indicates that families can open up to communicate their concerns due to respectful communication (Aguayo et al., 2025). The open-discussion enables problems to be resolved before they get serious. This helps in a favorable learning atmosphere.

Another benefit is increased family engagement in school activities. According to research, families that have a sense of respect are more apt to attending school events

and communicating (Hill & Tyson, 2009). The involvement assists the families to keep track of the progress of their child. It builds family-school relationships, as well. The literature however explains that these benefits are dependent on consistent effort as well. Communication should be continuing and implemented by school systems. The benefits might not be sustained without this support. This demonstrates that culturally responsive communication is beneficial, but it must be consciously practiced.

Challenges and Barriers

The effectiveness of culturally responsive parent-teacher communication in elementary schools has some challenges that can restrain its effectiveness. Language differences between families and schools are one of the key obstacles. Studies indicate that families that do not communicate well in English might experience a challenge in comprehending school communication (Blair and Haneda, 2021). This may cause misunderstanding of tasks, school policies and student progress. Lack of a clear understanding of information may make families unable to support learning at home (Hill & Tyson, 2009). It can also make parents feel excluded from school activities. Because of this, the communication becomes less frequent and meaningful. In addition, studies show that lack of translation services reduces parent participation in school events and meetings (Blair & Haneda, 2021). In case schools fail to offer language support, families might feel that their needs are not addressed. This may undermine family and teacher trust. In general, the language barrier continues to be a significant issue when it comes to establishing effective communication.

Cultural misunderstandings also create difficulties in parent–teacher communication. There can be differences in the beliefs of families and teachers about

education, discipline, and styles of communication. Studies describe that in situations where teachers do not understand these variations, they can misinterpret the family behavior (Baquedano López et al., 2013). For example, some families may not attend school events because of work or cultural expectations, not because they do not care. Families may be perceived as disengaged when teachers misinterpret this. This may hurt family-school relationships. It can also cause families not to communicate in future. Moreover, research indicates that cultural variations may influence the way messages are perceived (Baquedano López et al., 2013). What appears obvious to a teacher may appear perplexing or awkward to a parent. Such misconceptions demonstrate the importance of cultural awareness in communication.

Another problem that is addressed in the literature is the power imbalance between schools and families. Schools tend to regulate the nature of communication, such as when and how information is exchanged. Studies indicate that it can result in a situation when a family feels that they have less say in determining how their child should be educated (Baxter and Kilderry, 2022). Families might not feel empowered and thus they might be afraid to ask questions and express concerns. This suppresses the free flow of communication. It may also decrease the trust between teachers and families. Moreover, the research indicates that families with marginalized backgrounds might experience judgment or lack of respect in schools (Baxter and Kilderry, 2022). These feelings can create distance between families and schools. It is significant to deal with power disparities to establish equal partnerships.

Inadequate training of teachers is another obstacle that influences communication. Many teachers report that they have not received enough training in

culturally responsive practices. Evidence indicates that unless teachers are trained on how to effectively communicate with different families, teachers might not understand how to do it (Madhlangobe & Gordon, 2012). This may result in adopting communication strategies that are not family-oriented. It may also result in unintentional misunderstandings. Moreover, teachers are unable to concentrate on relationship building due to time constraints and workloads (Madhlangobe & Gordon, 2012). These issues demonstrate that the process of communication relies on the personal and the support of the school. Collectively, these obstacles justify the challenges in enforcing culturally responsive communication in elementary school.

Conditions Influencing Effectiveness

There are a number of conditions which determine the effectiveness of culturally responsive parent-teacher communication in elementary schools. Teacher knowledge and training is one of such conditions. It has been found that educators possessing cultural awareness can communicate respectfully and effectively more often (Banks et al., 2024). This implies that trained teachers will be in a better position to identify family needs and change their communication styles. It also makes teachers think about their beliefs and not to make assumptions about the families. Communication will be more inclusive when the teachers are ready (Ilmi et al., 2024). This enhances relations between schools and families. Furthermore, research indicates that professional development initiatives enable educators to gain confidence to work with diverse families (Banks et al., 2024). Greater confidence enables teachers to speak more effectively and consistently. This helps in greater family participation. In general, teacher preparation is a contributing factor to communication effectiveness.

The leadership and policies in schools also influence the communication in the elementary schools. According to research, communication practices are more sustained and facilitated when school leaders focus on family engagement (Mapp and Bergman, 2019). This involves supply of resources like translation services and time so that the teachers can engage with the families. When schools develop explicit communication expectations, teachers will adhere to them. It also demonstrates to families that their participation is valued. This makes communication an everyday school culture. Moreover, research indicates that supportive leadership can be used to establish trust between families and schools (Mapp & Bergman, 2019). Trust is developed when communication is promoted and appreciated. It provides a more favorable school atmosphere to students and families.

Communication tools and methods also influence effectiveness. Some of the tools that elementary schools employ include phone calls, emails, meetings, and digital platforms. Studies indicate that multiple communicating choices can be beneficial in addressing the needs of various families (Graham Clay, 2025). This flexibility enables families to adopt the approaches that suit their time and technology availability. It also enhances the likelihood of family responding to communication. However, studies also explain that using many tools does not guarantee success (Graham Clay, 2025). Communication should not lose its clarity, respect and cultural sensitivity. The tools alone cannot work without these qualities. This demonstrates that the manner in which communication is conveyed is as important as the means through which it is done.

Another circumstance that influences communication is family context. Families vary in work schedules, language skills and experiences in schools in the past. The

studies indicate that communication is more supportive when teachers take these factors into account (Haines et al., 2021). This assists in alleviating stress among the family. It also increases accessibility of communication. Moreover, the literature indicates that trust is built over time due to a respectful and regular communication (Haines et al., 2021). Trust helps the families to remain involved and open up. These circumstances demonstrate that effective communication requires preparation, support, and comprehension of family needs.

Areas of Agreement and Disagreement in the Literature

The literature is very much in agreement that parent-teacher communication plays a vital role in the success of students in elementary schools. Numerous scholars concur that communication is effective in establishing relationships between schools and families. Research demonstrates that respectful, culturally aware communication helps families to connect with teachers more (Epstein, 2018). This interaction encourages the learning and growth of the students. It is also useful in establishing a relationship between school and home. Students are better supported when the joint efforts of families and teachers are combined. Moreover, studies concur that trust is an important element of effective communication (Epstein, 2018). Trust enables the families to feel free to express issues and ask questions. This establishes a more powerful collaboration between families and educators.

There is also an agreement amongst the researchers that communication should be meaningful and not simply frequent. Research indicates that sending more messages alone fails to enhance the results when the communication is not effective or responsive to the culture (Aguayo et al., 2025). This means that quality is more

important than quantity. Communication is more effective when it is based on family needs. It also assists families to have a better understanding of school expectations. Besides this, studies indicate that communication should be continuous and regular in order to form good relationships (Aguayo et al., 2025). A single interaction cannot sustain long term interaction. This agreement emphasizes the significance of intentional communication practices.

Despite these agreements, there are areas of disagreement in the literature. The influence of communication on academic achievement is one of the areas of difference. There are studies that indicate that there is a strong relationship between communication and higher academic results, whereas others indicate mixed results (Zhang et al., 2011). These variations can be due to differences in school environments or students. They can also be connected with the measurement of communication used in research. Because of this, researchers do not always agree on the level of impact communication has on achievement. The other point of conflict is how communication is to be applied. Other researchers concentrate on school wide systems, whereas others concentrate on the practices of individual teachers (Mapp & Bergman, 2021). These distinctions imply that structure and personal interaction are both significant. Overall, the literature shows general agreement on the importance of communication, with ongoing discussion about its impact and implementation.

Conclusion

This literature review has explored the concept of culturally responsive parent-teacher communication and their connection with the student achievement in elementary schools. Throughout the research, it is repeatedly stated that

communication is a significant aspect of successful family-school partnerships. It has been demonstrated in the literature that respectful, clear, and culturally informed communication can make relationships between families and educators stronger and help learners achieve positive outcomes. Simultaneously, the study highlights that communication is complicated and affected by various factors in schools and communities (Epstein, 2018).

The reviewed findings indicate that culturally responsive communication has the potential to promote academic success, desirable behavior, and enhanced family involvement. When teachers recognize families' cultural backgrounds and communication preferences, families are more likely to feel valued and included. Such feeling of belonging may help to motivate families to play more active role in education of their children and cooperate with teachers. However, the literature also makes clear that these benefits are not automatic and depend on intentional practices and supportive conditions (Aguayo et al., 2025).

There are a number of challenges and barriers that hamper effectiveness of culturally responsive communication. Language barriers, cultural lack of understanding, power structures and insufficient training of teachers can diminish effective interaction between families and schools. Communication is complicated by structural constraints like time and limited resources. These obstacles demonstrate that culturally responsive communication cannot be done solely by individuals. It relies on school wide support, professional learning and leadership that appreciates family engagement (Baxter and Kilderry, 2022).

The literature also singles out conditions that determine the extent to which communication practices can be effective. The awareness of teachers, the inclusion policy of the school, the ability to communicate flexibly, and consideration of the family background are all significant factors. Trust emerges as a key factor across studies. Trust is built with time, through respectful exchange of information and provides a basis of working together. With the help of trust, families and teachers can more effectively resolve academic and behavioral issues (Mapp & Bergman, 2019).

On the whole, there is a general consensus in the literature regarding the significance of culturally responsive parent-teacher communication, but there is still debate regarding how it can be applied and assessed. Variations in studies imply that context is important and communication practices should be customized to support the needs of different families. The review can be used to achieve a balanced picture of culturally responsive communication, as it identifies both the opportunities of the practice and the constraints. Continued research can further clarify effective strategies and support equitable communication practices in elementary education.

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Deinfluencing: The Next Strategic Communication Move in Fitness?

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Abstract

The purpose of this study was to gather respondents' responses about their perceptions of the future of strategic communication within organizations of fitness. A qualitative thematic analysis revealed two major themes, one hard-to-classify theme, and an unexpected theme which resulted in the focus of this article. Deinfluencing was a term used multiple times by respondents, and one with which the researcher was not familiar. Therefore, this work lays a foundation for better understanding deinfluencing as an organizational communication strategy within spaces of fitness. The applied nature of the results could benefit fitness and professional organizations who seek to improve members' and associates overall experiences through improved communication effectiveness.

Key Words: Thematic Analysis, Fitness Communication, Technology, Organizational Communication

Fitness is big business in the United States. According to the 2025 executive summary from mmcginvest.com, the year is expected to have a fitness GDP of around $45 billion (2025). Moreover, it is estimated that nearly 77 million Americans hold gym memberships. The same business report found the market is growing around three key areas: 1) traditional gyms and fitness centers, 2) boutique fitness studios (like yoga, bare, Pilates), and 3) digital/virtual fitness platforms. As an applied communication scholar who dabbles in fitness and studies organizational and strategic communication, I am fascinated by how communication can help individuals reach their fitness goals. Additionally, I am curious to see how fitness organizations use strategic communication best practices to achieve their organizational goals.

Typically, the results around fitness communication practices are not significantly different from those of other niche organizations in terms of strategic communication practice. When I first started looking at the phenomenon in 2022, many respondents identified TikTok as an emerging post-pandemic place to find inspiration, ideas, and marketing strategies. Since then, we have seen the rise of social media in general, particularly among people following fitness influencers and trends. 2023 changed a lot of the communication [entire?] world with the free late-2022 rollout of ChatGPT and the generative artificial intelligence revolution.

The current study, however, produced results for this researcher that I was not expecting. Typically, when we social scientists work with a hypothesis or research question, we work to prove or disprove it, or present the results as they are in an attempt to answer a question. I deployed an extensive questionnaire in August 2025, receiving more than 600 convenience-sample responses. Questions ranged from areas of gym culture to fitness outcomes guided by fitness-based strategic marketing

strategies. The instrument is entirely open-ended and is coded for themes using Creswell's Thematic Analysis tool (2008).

Specifically, though, this study focuses on the question: What do you think is the future of communication in the fitness industry/world? Be as imaginative as you have time for? This question and its responses are in the Appendix.

The purpose of this research question was to provide a practical, empirical report that could help fitness enthusiasts and practitioners of strategic communication related to gyms and beyond. What resulted from the coding is an unexpected theme that may be at the forefront of social media trends in general: deinfluencing. What follows is the current literature review of strategic communication in fitness, AI in fitness, and what little review exists of social media de-influencing. I will explain the study, how it was coded, its results, discussion, some possible future theoretical grounding in Organizational Cultural Theory, limitations, and the future of this work.

Literature Review

Strategic Communication in Fitness

It's quite jarring how "dated" literature from just a few years ago can seem when discussing strategic communication in general. Of course, principles of communication modeling or the Ps in marketing will remain, but the technology, trends, and issues are quickly evolving. I pulled a sample of literature dated 2023 or newer. I wanted to see what scholars are finding *now*. I personally think we will see an artificial intelligence “epoch” beginning with the open access of Chat GPT starting in late 2022 to early 2023. To that end, I searched for literature from that period on to give the reader a sense of the current landscape related to strategic communication in fitness.

Jiang and Ning (2023) researched the effectiveness of using various social media tools to increase the level of physical activity in people of different ages. Participants shared their results and achievements across multiple media platforms, including short-form video and social media posts. They posit that the data can be used

for further development of specialized training programs using digital technology and social networks.

According to Gonzalez-Serrano et.al., social media can be an effective tool to foster values and lifestyles such as physical activity (2024). They suggest it is largely unknown what type of social media information helps to promote physical activity practices. In general, their work found that online photos, gender, and the kind of physical activity practiced are relevant for improving the physical activity-related behavior of social media users.

Supporting the move toward social media in the strategy of fitness outcomes, Yin et. al. suggest that social media fitness influencers are driving a maturation of online fitness, which is especially significant in the current era of globally decreasing levels of physical activity (2024). The results of their study revealed that three elements from source credibility theory —trustworthiness, physical attractiveness, and content quality of social media influencers—along with electronic word-of-mouth in fitness videos, influence viewers' trust and perception of the videos' usefulness, ultimately leading to exercise intention.

Some in the fitness space use technology and strategy for coaching. Jafar et. al. (2023) studied how virtual health coaching had greater benefits for glycemic control in patients with diabetes. Their results suggest coaching takes place in five areas: individualized feedback and insights, goal setting, barrier identification, facilitation to change behavior, and clients' clinical, mental, and social health. While diabetes is a medical condition, fitness can serve some of the same purposes as it has the same outcomes as improving the health or well-being of the person using online tools.

Ahmann et. al. (2023) were interested in health and wellness maintenance through coaching. Specifically, using the Transtheoretical Model of Change and identifying key stages in behavior change and maintenance after six months. They posit that coaching [possibly through online strategies] can help clients keep up the work they have achieved.

This idea is further supported by the work of Bäccman, Bergkvist, and Wastlund (2023), who found that personalized short messages (SMS) (text messages) coaching was effective in supporting clients' behavior changes. Their analysis showed clients' capabilities, opportunities, and relationships improved with the fitness consultations during SMS interventions. Therefore, they concluded that personalized SMS coaching is an effective method for supporting healthy behavior changes.

Quite pertinent to the current study about the future of communication in the fitness world was the study by Diller and Passmore (2023). Their work sought to better define what digital coaching is. They conclude the term "digital coaching" is widely used but ill-defined. Their larger work investigated how the term and its relevant actions are different from face-to-face coaching. They suggest future studies should explore the digital coaching process and its effectiveness, particularly in comparison to other formats. They posit that this definition could enable practitioners to maintain professional standards and manage client expectations of digital coaching while helping clients understand what to expect from digital coaching. This is one of the main reasons the current study exists: to support communication specialists and gymgoers in understanding how strategic communication can benefit everyone.

Finally, Boyatzis et. al. explored the behavior of coaching within organizations. Not surprisingly, they find that coaching competencies affect the outcome of those being coached (2024). This is interesting to the current study because *how* this is delivered could make all the difference in someone’s outcomes.

Artificial Intelligence (AI)

It seems every organization and industry is currently being affected by artificial intelligence. To that end, this section appraises the current literature on AI as most closely related to the current study. According to Mateus et. al. (2025), the world of sports is undergoing a rapid digital transformation, driven by advancements in technology, particularly artificial intelligence.

Albert and Arnrich (2023) recognized resistance training as beneficial to athletes and aging people alike. Their work focuses on using technology to predict and monitor fatigue in resistance training. An effort undertaken by technology. Their results showed that using technology was effective in predicting certain levels of fatigue.

From physical health to psychological health, Tan et. al. (2024) were interested in exercise prescriptions that use technology. Their goal was to determine whether multimodal data-driven AI systems could be effective for personalized exercise prescriptions targeting individuals with mental illnesses. They found the integration of sophisticated AI with individualized exercise prescriptions paves the way for more effective, patient-tailored therapeutic strategies.

Xu et. al. (2024) were met with similar results. Their studies aimed to understand how assessment or personalized exercise prescriptions issued by Chat GPT 4.0 can help combat hypertension comorbidities. Similar to mental health conclusions, they found that the path of generating exercise prescriptions using artificial intelligence, whether via ChatGPT or Intelligent Health Promotion Systems, cannot achieve a completely satisfactory state.

The Covid pandemic drove many fitness-goers to exercise at home. Chae et al. (2023) investigated how posture during squatting exercises was affected in individuals without their usual coach or trainer present to provide guidance. Their work explored remote coaching, cited by them as one of the most effective solutions to the posture problem, and found that their participants who trained with an app were more likely to have better posture by week two of the trial. They discovered a mobile app offering cost-effective self-discovery feedback, effectively teaching users about squat exercises without the need for an expensive in-person training session.

In contrast to Chae et al., Zaleski et al. (2024) found notable gaps in comprehensiveness, accuracy, and readability of AI-generated exercise recommendations. This work stemmed from the understanding that augmenting a regular evidence-based lifestyle with care could potentially enhance care and reduce barriers. The idea is good, but there are potential gaps in the application.

Dergaa et. al. (2024) recognized that AI applications in healthcare provide new possibilities for health management. They posit that AI-based fitness applications are becoming more common. However, after conducting studies around CHAT GPT 4.0 in personalized health promotion, they conclude that AI technologies are not yet recommended as a substitute for personalized, progressive, and health-condition-specific prescriptions provided by healthcare and fitness professionals. They found that further research is needed to explore more interactive use of AI models and integration of real-time physiological feedback. While the current study does not fully evaluate AI modeling, it does honor the nature of the future implications, and I explore the future of strategic communication within fitness spaces.

Purpose and Research Question

As an applied communication scholar who often studies organizations and fitness, I hear about and work with AI daily. Whether students, projects, trips, or discussions, ChatGPT is never too far in the distance. Yet, it occurred to me that AI has not yet made its way into my fitness organizations. To that end, I deployed the following IRB-approved research question:

RQ1: What do you think is the future of communication in the fitness industry/world?

Be as imaginative as you have time for. (Answers may include media, advertising, training, etc.).

I was interested in survey participants' open-ended responses and planned on coding them for this paper and possible future projects. I will highlight that method below and provide the results and discussion for use by anyone in the discipline and beyond.

Method

During the summer of 2025, I deployed a convenience sample survey asking a series of questions about attitudes toward fitness, fitness culture, attire, and more. This particular research question of RQ1 was open-ended on Qualtrics, and participants could write as much as they wanted. I posted the link on my personal and professional social media outlets as well as in my course learning management systems at a private liberal arts university in the Southeastern United States. The demographics of who was providing the answers were not important to me, as I was more curious about what themes would arise, regardless of who they came from.

Coding

There were 48 usable, well-written responses to RQ1. To code the reactions, I used Creswell's Thematic Analysis (2008). Responses were aggregated together to form major ideas. Like codes, themes have labels that typically consist of no more than two to four words. In thematic analysis, there may be several types of themes, and I used Creswell's suggestion of 1) major/minor themes (often called ordinary), 2) unexpected themes, and 3) hard-to-classify themes.

Results

The first major theme was quite ordinary, and I categorized it as: social media. Over one quarter of the respondents included the term social media in their responses. Examples of this are responses like:

> Social media has been really helpful in showing outsiders not in the fitness industry that while there are crazy fanatics out there, there are non-crazy people too.

> It is for sure social media, but social media as positive as it is, is also very negative. Younger kids see these body builders who look amazing and they end up taking short cuts and may try to hop on a synthetic drug the shouldn't. But social media also promotes more people to be active and healthy.

> Social media is the heart of a lot of stuff. Brands have to get creative in how they market their gyms, fitness brands, supplements, etc.

The second major theme was also quite ordinary, and I categorized it as: artificial intelligence (AI). Again, over a quarter of the respondents included the terms artificial or virtual reality in their answers. Examples of this are responses like:

> I think the future of fitness communication will be all about AI trainers , virtual reality workouts, and social media making every workout more interactive and personalized.

> At-home 3D body imaging, AI integration into meal planning and workout generating, thus enabling individuals to customize plans that work for them with their schedules.

> I think technology will become more integrated and the need for personal trainers will go away as AI can do so more efficiently.

The third theme was coded as: hard to classify. With just under a quarter of the respondents, 11, answering questions in somewhat similar manners, this emergent theme was conflated with responses about body image or access to fitness spaces. Body image and access are often discussed in social media pieces, as well as in online

and virtual training programs. Therefore, this was not an unexpected theme, but the answers were fewer than the others whereby coding it as hard to classify. Examples of this are responses like:

> Offer more personal training opportunities, and even training employees to be more personable with guest/clients.

> The future of communication in the fitness industry can be improved and more affordable to people who cannot afford a gym membership or experience Pilates.

> Showing more body positivity.

> If the fitness industry could find a way to let people know how inclusive it is, I think that would help…if a gym or fitness company could let novices know that they are welcome and can be themselves, that could go a long way.

The last theme was coded as: unexpected. It is this theme that inspired the name for this article, “deinfluencing.” I had never heard this term, and five respondents used it or some similar term directly. With some quick research, deinfluencing is a new online trend that works against less-than-trusted influencers to provide readers/viewers with a realistic and truthful message. Examples of this are responses like:

> I think deinfluencing is going to catch on in fitness, hard. Honest reviews of routines, supplements, and diets that don’t work will get more and more traction.

I do enjoy some influencers that don't fall into your standard bodybuilding or extreme fitness tropes showing what bodies that are different are capable of doing and also including adaptive exercises.

Tell all podcasts and stories and show the ugly side of it all. Not this perfect world personal that doesn't exist.

I believe there will be a backlash against the gym influencers because most of them are pushing unrealistic expectations to their followers. The followers can do the same workouts and try to mimic their influencer's body type, but the reality of all the things that need to be done is not as clear to them [the follower].

I think we're going to see more and more fitness creators online that use their platform to teach people what to do in the gym, I think they can normalize have conversations in the gym as well.

Discussion

The unexpected theme of deinfluencing was fascinating to me, as I genuinely had not expected it compared to the major themes and the hard-to-classify theme. When coding the responses, I turned to the Internet to see who else was talking about this. When googled in September 2025, the results produce the definition:

Deinfluencing is the practice of encouraging people to think critically about their purchasing decisions and resist the pressure to buy products just because influencers endorse them. Unlike traditional influencers who promote products and services, deinfluencers focus on providing honest reviews, highlighting the

> downsides of products, and advocating for more mindful consumption (Trimark, 2025, Google).

This idea aligns with my experience of often turning to Reddit for answers to specific questions or product reviews. The raw and communal feeling of Reddit exudes reviews from the “old days," which, on places like Amazon and Google, feel fake, tailored, or planted. Reddit is honest from its registered users to the long-winded, misspelled, and often casual answers to questions that reveal far too much personal information.

Some outlets credit deinfluencing to a 2023 TikTok hashtag, but how much farther it can go will be interesting for us to observe in the next couple of years. Will fitness enthusiasts completely turn their backs on social media (one of the major themes) with its pretty people and sometimes unrealistic goals and body image ideals, in favor of honest “real talk?” Or will pretty people, sketchy products, and high aspirations continue to dominate the future of strategic and organizational communication within fitness spaces? I will mention some future thoughts on that later, but the current discussion is essential for *today*.

The major themes here cannot be ignored. Respondents believed that social media would continue to dominate their fitness spaces. From inclusivity to communicating with current and future clients, the data indicate that social media is expected to remain or grow in importance in the future of strategic communication in fitness spaces.

Additionally, AI appears to be at the forefront of the respondents' minds. This aligns with the literature review and is supported by similar studies in health and longevity. Both this study's respondents and those in studies reviewed in the literature reported expecting AI to augment and not yet replace the current best practices. However, AI is here, and it is now being considered in fitness organizations. While wearable technology and virtual reality have been around for a while in sports and medicine, AI, as it is known today, has now taken off within fitness.

Limitations

One limitation of an open-ended question study is the differing heft of responses between study participants. Having more responses would counter-balance this limitation. However, I felt the depth of the responses was effective for the coding of this preliminary study and its unveiling of deinfluencing.

Second, a future study could benefit from examining the demographics of the respondents. Perhaps older respondents would not consider AI or definluencing, but those tied to their phones might. I did not parse out responses by demographics, and this could be a possible limitation.

Finally, I typically ground my work in the theoretical framework of Organizational Cultural Theory. Things belong in certain places, people feel certain allegiances, and so on. However, with my goal of adding to the strategic communication body of literature, and the purpose of this applied communication study being used by its readers, I traded that theory in exchange for the results to be efficiently coded, themed, and hopefully published. Which leads to the future.

Future Implications

Many things could happen from this study forward. Longitudinal work could revisit the same question over time and compare the results. Someone could break the work into three different studies about social media, AI, and deinfluencing. Personally, I want to explore deinfluencing further, and maybe someone else will too. Much is written about social media and AI. The gap in the academic literature or the nascent nature of definfluencing may open a door for further study. There could be a comparison of the rise in deinfluencing (if any) to the demise of overly fake social media influencing. An investigation into the nature of belief could be conducted to understand when someone trusts the deinfluencer. This would be grounded in theory, such as Uncertainty Avoidance or Fundamental Attribution Error. The future looks bright for deinfluencing.

Conclusion

This study is based on the current literature for social media and AI, asking: what is the future of communication in the fitness industry? I wanted to see what respondents would say about these areas in relation to what the literature was saying in similar spaces. Thoughtful respondents posited social media and AI uses similar to the current literature, with a few creative outliers. However, after collecting and coding the data, the unexpected theme of deinfluencing emerges as a novel perspective in the academic field of strategic communication within fitness organizations. While the responses were fewer than the ordinary themes, a comparison to the Internet after the data were collected uncovered that people are, in fact, talking about deinfluencing. Therefore, I hope future research will further investigate the deinfluencing trend with the hope of applying that and all related research to strategic and organizational communication practice within fitness spaces.

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Appendix

What do you think is the future of communication in the fitness industry/world? Be as imaginative as you have time for. (Answers may include media, advertising, training, etc.).

Offer more personal training opportunities, and even training employees to be more personable with guests/clients.
Social media has been really helpful in showing outsiders not in the fitness industry that while there are crazy fanatics out there, there are non-crazy people too!
It is for sure social media, but social media as positive as it is, is also very negative. Younger kids see these body builders who look amazing and they end up taking short cuts and may try

to hop on a synthetic drug they shouldn't. But social media also promotes more people to be active and healthy.
More communication, becoming more of a social hub. Run clubs and CrossFit classes
I think we’re going to see more and more fitness creators online that use their platform to teach people what to do in the gym, I think they can normalize having conversations in the gym as well.
Social media, its already here but i think its here to stay.
Communicating virtual gym options
I think the future of fitness communication will be all about AI trainers, virtual reality workouts, and social media making every workout more interactive and personalized
I really could not even begin to guess
The future of communication in the fitness industry can be improved and more so more affordable to people who cannot afford a gym membership or experience Pilates.
Training and access to resources to meet goals
at home 3d body imaging, AI integration into meal planning and workout generating, thus enabling individuals to customize plans that work for them with their schedules
While my previous answer said less media exposure, social media is at the heart of a lot of stuff. Brands have to get creative in how they market their gyms, fitness brands. supplements. etc
I feel like I never see advertising for specific services only for gym, clothes or articles, maybe advertisement in ways that people could grow their own fitness goals without focusing on what society thinks they need to do
With ai coming, a whole new way of creating workouts
I think technology will become more integrated and the need for real personal trainers will go away as AI can do so more efficiently
Showing more body positivity
AI driven, truly personalized fitness programs for physical and mental health. The goals need to be realistic instead of just telling people what they want to hear in order to make sales.
If the fitness industry could find a way to let people know how inclusive it is, I think that would help. Like I said, I think many people are intimidated by gyms and possibly even the people who go there. If a gym or fitness company could let novices know that they are welcome and can be themselves, that could go a long way.
I think the future of communication in the fitness world will keep moving toward technology-driven connections. We already see people recording themselves, tracking workouts on apps, and sharing progress on social media. In the future, I imagine more interactive platforms

where trainers can give real-time feedback through AI or virtual reality, almost like having a coach in your ear or on your screen wherever you go. At the same time, I think there will be a push for more authentic, human-centered communication. People are already starting to get tired of the self-absorbed side of social media in fitness. I imagine gyms and studios creating spaces that encourage interaction small group training, community challenges, and wellness programs that combine fitness with mental and social health. It's important because fitness communication isn't just about reps and sets, it's about motivation, belonging, and identity. The future, I think, will balance the efficiency of technology with the warmth of human connection making fitness not only about performance, but about community and whole-person well-being

Sensors to tell you whether you’re doing it right

Maybe AI trainers? Those probably already exist, but I think that would go a long way for people who do not feel comfortable in gyms but still need the guidance of a trainer.

Relieve AI is going to be a big part of communication in the future when it pertains to the fitness world. AI trainers, AI nutritionist, etc..

Weight lost !

Small independent personal trainer gyms. The personal trainer owns a small gym area that he or she runs their business out of

I believe there will be a backlash against the gym influencers because most of them are pushing unrealistic expectations to their followers. The followers can do the same workouts and try to mimic their influencers body type, but the reality of all the things that need to be done is not as clear to them. Also, I believe we will eventually get to be more open about who is using drugs to help enhance their fitness physique such as Ozempic or other steroids to build muscle mass, I look forward to a more realistic atmosphere.

People who work from home will need some type of push to get off the sofa. My issue is trying to break away from home office to get a walk in, gym time

Online training is the future no actual person is needed

Look at insurance commercials… many messages for many audiences.

I think social media’s use of AI may complicate it further

As mentioned in 10, audio or visual guidance and feedback would be helpful. People aren’t always comfortable in asking others for help and aren’t able or willing to pay a trainer. Even a scan-based program on how to meet your goal and with a code you would be guided through a workout of the day.

Communication within fitness feels niche and is hard to understand if we are a solo gymgoer with little interaction with others.

No idea on this one.

Artificial intelligence generated videos of workouts

Our model is work smarter not harder so hopefully communication could be more technology driven with tools like AI all minute reality etc. will make communication more interactive.
I'm not sure about this. It seems to be quite stagnant
Pushing more ideal body types instead of promoting good nutrition.
In my experience with boutique fitness, it’s gone from very hands-on ownership to investors who are very hands-off who hire general managers
Social media, wearable devices
Media will always be the future of communication in the day and age
I think "deinfluencing" is going to catch on in fitness, hard. Honest reviews of routines, supplements, and diets that don't work will get more and more traction.
I'm unqualified to answer this.
AI will probably be the driving force behind marketing so hard to say. I believe fitness goes hand and hand with nutrition so more advertisement regarding healthier eating can help lean to better understanding of fitness.
I do worry a little bit about social media influencing for the fact that there are some really negative behaviors out there that are not helpful or beneficial to others. I do enjoy some influencers that don’t fall into your standard bodybuilding or extreme thinness tropes showing what bodies that are different are capable of doing and also including adaptive exercises
I think social media is a blessing & a curse. People need to be reminded, not everyone has the same body composure. Also, food is the real goal.
Expand group classes so all can be welcome
Even more noise and misinformation, AI generated slop making up fitness and nutrition routines that are nonsense
Live streaming
Tell all podcasts and stories and show the ugly side of it all. Not this perfect world persona that doesn’t exist.
At home virtual trainers or machines like that mirror thing
Training, Media and online

Spotify Versus Apple Music

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Abstract

The focus of this project was to analyze consumer preferences between Apple Music and Spotify in order to help improve each platform's online marketing strategy. Our survey included both Likert-scale and demographic questions to better understand how users perceive each service based on key features such as Spotify Wrapped, AI driven recommendations, podcast availability, pricing, and overall functionality.

Using Qualtrics and in person distribution, we collected 290 usable responses from our target population. We analyzed the data using SPSS to identify patterns in user preferences and develop meaningful conclusions and recommendations.

Approximately 69.4% of respondents Agreed or Strongly Agreed that Spotify Wrapped is a feature they look forward to at the end of each year. This led to a recommendation that Spotify continues their 'Wrapped' feature.

T-Tests showed that female respondents showed a significantly higher score than male respondents on the importance of a free- with ad version of Spotify. Spotify should continue to emphasize the free version with ad features they offer to the public.

Regression analysis showed that overall satisfaction of Spotify's music streaming platform was dependent on the importance of the Spotify Wrapped feature, how knowledgeable the respondents are of Spotify's platform, and the number of hours a week used.

Recommendations included that Spotify make more marketing efforts towards males. Spotify should extend their efforts to catch males' attention in the Spotify Wrapped feature, the variety of podcasts, and the free with ad version.

Key Words: Spotify vs. Apple Music, Segmentation Analysis

Introduction

This research paper is a very timely one on the topic of Gen Z's preferences of Spotify versus Apple Music. The reason for this topic is that music is so heavily ingrained in who Gen Z is. Today, one cannot be in a large group of Generation Z and go 20 steps without seeing a pair of headphones or AirPods.

Methodology

The questionnaire included questions on gender and age, the participants' university status and their use of the applications, questions and about how long the users partaken in using their application of choice. The next 15 questions are Likert scale questions about the preferences of certain aspects of each application. Then, the last 2 questions are "Overall" questions to finalize the participants responses. The questionnaire was formatted onto Qualtrics and distributed in a couple different ways. The majority of the respondents (196) responded to the questionnaire through the QR code. Social media was also used by posting anonymous links on Facebook and Instagram, which resulted in 121 additional respondents. For our survey we received 317 responses out of which 290 usable respondents were identified.

Literature Review

Generation Z has become a major segment of music streaming consumers. As digital natives, members of Gen Z have grown up with streaming services, social media, and mobile technology as part of their daily lives. Research suggests that music discovery among younger consumers is increasingly influenced by platforms such as TikTok, Instagram, and YouTube, where short content exposes users to new songs and artists (Anderson, 2023, Nguyen et al, 2022). These shifts in music consumption have changed how users engage with streaming platforms and may influence platform familiarity and preference.

Previous research also suggests that music plays an important role in self-expression and social interaction among Gen Z consumers. Streaming services are no longer used only for listening purposes but also serve as tools for sharing content, creating playlists, and participating in online communities. According to IFPI (2024), younger consumers spend substantial time discovering and engaging with music across multiple digital platforms. As a

result, platform features related to personalization, discovery, and social engagement may be particularly important to this generation.

Spotify and Apple Music are among the leading music streaming services available to consumers. While both platforms offer similar access to music libraries, previous research suggests that they differ in ways that may influence user preferences. Spotify has developed a reputation for music discovery through personalized recommendations, algorithm-driven playlists, and social listening features. Research by McLean and Oliver (2021) found that Spotify's recommendation tools contribute to ongoing user engagement and familiarity with the platform.

In contrast, Apple Music places greater emphasis on ecosystem integration and connectivity with Apple products. Users who are already invested in Apple's ecosystem may benefit from a more seamless listening experience. However, Spotify's free ad-supported tier and personalized discovery features may provide advantages among younger and more price-sensitive consumers (Spotify, 2025). Prior research has also highlighted the importance of peer influence in music consumption, suggesting that social features may contribute to platform engagement and preference (Mares & Han, 2023). Prior studies suggest that demographic characteristics may influence music streaming behaviors and platform preferences. Age differences within Generation Z may be particularly relevant, as younger users often engage more frequently with social media-driven music discovery and emerging platform features (Anderson, 2023). These differences may affect users' familiarity with streaming services, perceptions of platform features, and overall platform preferences.

Research has also identified gender differences in online communication and self-presentation behaviors. VandenBosch and Eggermont (2012) found that women are generally more likely to engage in online sharing activities, which may have implications for features such as Spotify Wrapped. Because Spotify Wrapped encourages users to share personalized listening data, it may appeal more strongly to female users than male users.

Student status may further influence streaming platform preferences. College students are often more sensitive to subscription costs and may place greater value on discounted pricing plans when selecting a streaming service (Dobberfuhl & Karppinen, 2023). In addition, students may be more likely to utilize free or lower-cost service options when available. Together, these findings suggest that age, gender, and student status may influence how users

evaluate and engage with Spotify and Apple Music. Based on these findings, the following hypotheses are proposed.

Given our focus on Gen Z, defined as 14-29 years today, we examined differences within the Gen Z group by gender, age, and student status. The median age of our sample was 20.4, so we examined differences below and above the median.

Age-based Hypotheses:

H1: Younger users (14-20.5) have less experience with music apps

H2: Younger users (14-20.5) are less knowledgeable about music apps

H3: Younger users (14-20.5) are relatively more knowledgeable about Spotify

H4: Younger users (14-20.5) are less likely to be influenced by student pricing plans

H5: Younger users (14-20.5) are more likely to want to switch from Apple to Spotify after college because of their family plans

H6: No difference is anticipated between younger and older (21-29) uses in terms of overall preferences in terms of Apple vs. Spotify

Gender-based Hypotheses:

H7: Female Gen Zers are more likely to prefer Spotify because of Spotify's wrapping feature

H8: Female Gen Zers are more likely to prefer Spotify because of Spotify's free with ad version

H9: Female Gen Zers are more likely to prefer Spotify because of Spotify's feature of allowing users to see what their friends are listening to

Student-status-based Hypotheses:

H10: Student Gen Zers are more likely to prefer Spotify because of Spotify's wrapping feature

H11: Student Gen Zers are more likely to prefer Spotify because of Spotify's free with ad version

H12: Student Gen Zers are more likely to prefer Spotify because of Spotify's feature of allowing users to see what their friends are listening to

The results of these hypothesis tests are presented later in the paper after an analysis of the variables studied, so that the reader may have a better understanding of the Spotify vs. Apple Music streaming platforms.

Data Summary

Approximately 38% (38.89%) of the participants were male and 61% (61.11%) were female. A statistical test confirms that proportions of females or males is not significantly different from those of the student population.

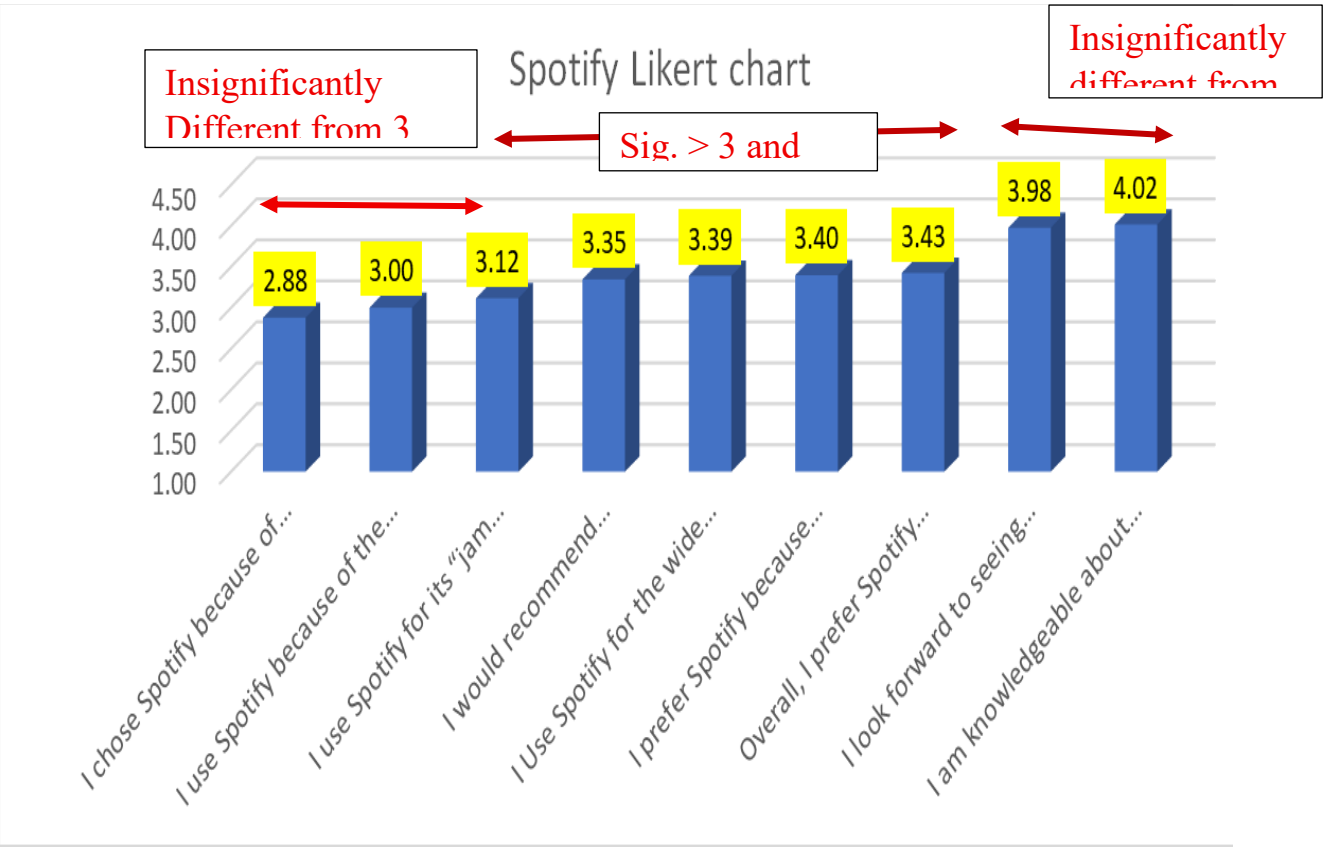
The majority of survey participants have an Apple iPhone; this makes almost 90% (89.62%) of the respondents' answers. After that, Samsung makes up almost 7% (6.92%), Android has 2% (2.08%), and Google phones have about 1% (1.38%). \

The data shows that 56.9% of respondents have used Apple Music. This indicates a significant portion of users have engaged with the platform. However, 43.1% of respondents did not indicate usage, which could suggest either non-use or unreported use of Apple Music. The mean, median, and mode are all 1 for this chart.

The data indicates that 71% of respondents have used Spotify, while 29% has not. This suggests that Spotify has a strong presence over Apple Music in the market. The results show that 24.1% of respondents reported using other music streaming services outside Apple Music and Spotify

The data reveals a wide variety of weekly Spotify usage, with many respondents listening for a few hours each week. The mode is 0 hours, accounting for 12.4% of users. This likely indicates those who either don't use Spotify regularly or at all. For active users of Spotify, listening habits range from a couple of hours a week to 100 hours. The data shows that a solid portion of users spend 10-20 hours a week (with 50.5% of respondents reporting 10 or more hours).

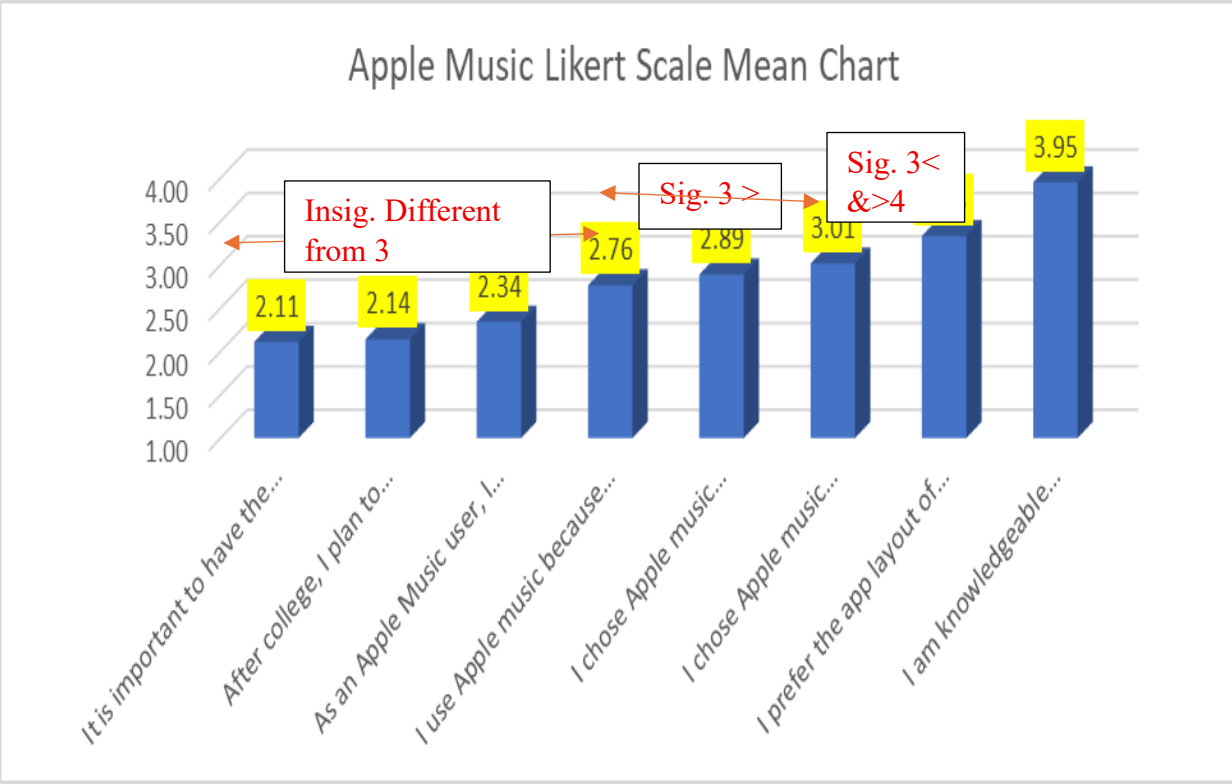
The data shows a wide range of weekly Apple Music usage among respondents. The mode is 0 hours, with 19% of the sample reporting no weekly use, indicating a sizable group of non-users or minimal users. Among those who do use Apple Music, listening time varies from 1 hour up to more than 100 hours per week. Most active users fall within the 4–15 hour range, and nearly 40% listen 10 or more hours weekly. The mean usage is 14 hours, while the median is 8.



When looking at the averages, we can see that Spotify users are knowledgeable but still neutral or uninformed on the items Spotify has to offer. This is indicated by the scores being all around the 3-point range with one score slightly exceeding 4 and one below 3. On a 5-point scale from 1 to 5, 1 being strongly disagree and 5 being strongly agree, the mean comes out to be 3.40 indicating neutrality when it comes to knowledge of Spotify's features.

Managerial conclusions:

With the chosen data points, it seems that Spotify users have a neutral viewing of these features on the app. From the data, it seems that people are knowledgeable about some of the features but could improve as it looks like the mid-point score is around 3. While there are some values that get close to or exceed the 4-point mark, which represents stronger agreement, most are clustered in the low to mid 3-point scale range. This indicates that most customers are more neutral on Spotify's features. We recommend Spotify find better ways to advertise their features on the app by putting greater emphasis on items scored between 2.88 and 3.12 but in total, their strategy needs improvement. Some ways they could do this are by continuing to offer and improve some of the music and its unique features like AI generated playlists that competitors don't have. Additionally, to help improve these lower scores, Spotify can increase the discoverability of their jam session and AI playlist features through a more user-friendly UI and notifications system. Lastly, improving their free plan option to provide better value than their competitors' free or paid options can really set them apart.



When assessing the data, we can find that majority of the responses would favor the disagree/strongly disagree end of the Likert scale. This being that the majority of the questions scored less than three on a 5-point Likert scale with 3 being neither agree nor disagree.

Managerial Conclusion:

We recommend that Spotify continue the work that they are doing in comparison to Apple music, seeing as the data would suggest that Spotify holds a significant favor in certain features in comparison to Apple music.

Regression Dependent Variable: I would recommend Spotify over Apple Music to my friends and family.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
3	.814[c]	.662	.595	.

c. Predictors: (Constant), I use Spotify for its "jam session" feature. , I use Spotify because of th $5.99/month Student Plan pricing. , It is important to have the brand name 'Apple' on my music app.

In this regression, we have successfully explained 59.5% of the variance in the dependent variable, I would recommend Spotify over Apple Music to my friends and family.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Si
3	Regression	24.474	3	8.158	9.811	<
	Residual	12.473	15	.832		
	Total	36.947	18			

a. Dependent Variable: I would recommend Spotify over Apple Music to my friends and family

d. Predictors: (Constant), I use Spotify for its "jam session" feature. , I use Spotify because of th $5.99/month Student Plan pricing. , It is important to have the brand name 'Apple' on my music

Based on the ANOVA, the regression as a whole demonstrates a linear relationship between the variables, significant at the 0.001 level.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
3	(Constant)	-1.860	.966		-1.926	.07
	I use Spotify for its "jam session" feature.	.786	.180	.691	4.365	<.0(
	I use Spotify because of the $5.99/month Student Plan pricing.	.500	.145	.519	3.446	.0(
	It is important to have the brand name 'Apple' on my music app.	.397	.184	.341	2.156	.04

a. Dependent Variable: I would recommend Spotify over Apple Music to my friends and family.

I would recommend Spotify over Apple Music to my friends and family = 0.691 * I use Spotify for its "jam session" feature. + 0.519 * I use Spotify because of the $5.99/month Student Plan pricing. + 0.341 * It is important to have the brand name 'Apple' on my music app

Managerial Conclusion:

The dependent variable chosen for the equation is "I would recommend Spotify over Apple Music to my friends and family." We can only explain 59.5% of this dependent variable, while the 40.5% could be random or staggering variables unrelated to this equation causing effects that were unable to control. With that, we have found that most effective variable in this final equation is "I use Spotify for its "jam session" feature." With a regression coefficient of 0.691, this variable has a larger effect on whether someone would or would not recommend Spotify to their friends and family. Whereas "I use Spotify because of the $5.99/month Student Plan pricing." has a slightly smaller effect of 0.519 and "It is important to have the brand name 'Apple' on my music app" has an even lower effect of 0.341.

Regression Dependent Variable: Overall, I prefer Spotify over Apple Music.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
3	.658[c]	.434	.422	.9

c. Predictors: (Constant), I look forward to seeing mine and my friends Spotify Wrapped at the end of the year., I am knowledgeable about Spotify and what it has to offer. Approximately hov many hours a week do you use Spotify?

In this regression, we have successfully explained 42.2% of the variance in the dependent variable, Overall, I prefer Spotify over Apple Music.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
3	Regression	99.829	3	33.276	39.032	<.001[d]
	Residual	130.438	153	.853		
	Total	230.268	156			

a. Dependent Variable: Overall, I prefer Spotify over Apple Music.
d. Predictors: (Constant), I look forward to seeing mine and my friends Spotify Wrapped at the end of the year. I am knowledgeable about Spotify and what it has to offer. Approximately how many hours a week do you use Spotify?

Based on the ANOVA, the regression as a whole demonstrates a linear relationship between the variables, significant at the 0.001 level.

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
3	(Constant)	.923	.327		2.826	.005
	I look forward to seeing mine and my friends Spotify Wrapped at the end of the year.	.505	.075	.471	6.717	<.001
	I am knowledgeable about Spotify and what it has to offer.	.230	.077	.214	2.988	.003
	Approximately how many hours a week do you use Spotify?	.010	.004	.156	2.483	.014

a. Dependent Variable: Overall, I prefer Spotify over Apple Music.

Overall, I prefer Spotify over Apple Music = 0.471 * I look forward to seeing mine and my friends Spotify Wrapped at the end of the year. + 0.214 * I am knowledgeable about Spotify and what it has to offer. + 0.156 * Approximately how many hours a week do you use Spotify?

Managerial Conclusion

The dependent variable chosen for the equation is "Overall, I prefer Spotify over Apple Music." We can only explain 42.2% of this dependent variable, while 57.8% could be random or staggering variables unrelated to this equation causing effects to be unable to control. With that, we have found that most effective variable in this final equation is "I look forward to seeing mine and my friends Spotify Wrapped at the end of the year." **Hypothesis Tests:**

The median age of our sample was 20.4, so we examined differences below and above the median.

Age-based Hypotheses:

H1: Younger users (14-20.5) have less experience with music apps

H2: Younger users (14-20.5) are less knowledgeable about music apps

H3: Younger users (14-20.5) are relatively more knowledgeable about Spotify

H4: Younger users (14-20.5) are less likely to be influenced by student pricing plans

H5: Younger users (14-20.5) are more likely to want to switch from Apple to Spotify after college because of their family plans

H6: No difference is anticipated between younger and older (21-29) uses in terms of overall preferences in terms of Apple vs. Spotify

Results:

	Age Recoded	N	Mean
How many months have you been using a music app, like Spotify or Apple Music?	Under 21	135	60.4667
	21 and Older	139	76.7482
I am knowledgeable about both Apple and Spotify music and what they have to offer. .	Under 21	117	3.80
	21 and Older	116	4.09
I am knowledgeable about Spotify and what it has to offer.	Under 21	127	4.14
	21 and Older	120	3.88
I use Apple music because of the $5.99/month Student Plan pricing.	Under 21	90	2.59
	21 and Older	83	2.98
After college, I plan to switch from Spotify to Apple because of their family plans.	Under 21	115	2.27
	21 and Older	100	1.97
I prefer the app layout of Apple Music more than the app layout of Spotify.	Under 21	99	3.26
	21 and Older	98	3.39
I prefer Spotify because there is a free- with ad version as Apple does not.	Under 21	106	3.46
	21 and Older	91	3.31
I chose Apple music because it allows me to view what my friends are listening to.	Under 21	81	3.02
	21 and Older	83	2.77

t	One-Sided p

How many months have you been using a music app, like Spotify or Apple Music?	Equal variances assumed	-3.518	<.001
	Equal variances not assumed	-3.530	<.001
I am knowledgeable about both Apple and Spotify music and what they have to offer. .	Equal variances assumed	-1.919	.028
	Equal variances not assumed	-1.920	.028
I am knowledgeable about Spotify and what it has to offer.	Equal variances assumed	1.694	.046
	Equal variances not assumed	1.687	.046
I use Apple music because of the $5.99/month Student Plan pricing.	Equal variances assumed	-1.788	.038
	Equal variances not assumed	-1.783	.038
After college, I plan to switch from Spotify to Apple because of their family plans.	Equal variances assumed	1.906	.029
	Equal variances not assumed	1.896	.030
I prefer the app layout of Apple Music more than the app layout of Spotify.	Equal variances assumed	-.558	.289
	Equal variances not assumed	-.558	.289
I prefer Spotify because there is a free- with ad version as Apple does not.	Equal variances assumed	.832	.203
	Equal variances not assumed	.825	.205
I chose Apple music because it allows me to view what my friends are listening to.	Equal variances assumed	1.275	.102
	Equal variances not assumed	1.277	.102

Thus, Hypotheses H1-H5 are supported because significant differences are found in each case. H6 is also supported because no significant differences are found in terms of app layout, ad versions, or viewing what friends are listening to.

Managerial Implications:

The entire purpose of segmentation analysis in marketing is predicated on the fact that one size does not fit all customers, and where differences exist, a targeted marketing strategy is far more effective than painting all customers with the same broad brush.

The results found above will help managers use segmentation to reach, more effectively younger or older customers, even within Gen Z.

Gender-based Hypotheses:

H7: Female Gen Zers are more likely to prefer Spotify because of Spotify's wrapping feature

H8: Female Gen Zers are more likely to prefer Spotify because of Spotify's free with ad version

H9: Female Gen Zers are more likely to prefer Spotify because of Spotify's feature of allowing users to see what their friends are listening to

	Gender	N	Mean
I look forward to seeing mine and my friends Spotify Wrapped at the end of the year.	Male	82	3.65
	Female	123	4.19
I prefer Spotify because there is a free- with ad version as Apple does not.	Male	78	3.04
	Female	120	3.63
I chose Apple music because it allows me to view what my friends are listening to.	Male	75	2.63
	Female	90	3.12

			Significance	
		t	One-Sided p	Two-Sided
I look forward to seeing mine and my friends Spotify Wrapped at the end of the year.	Equal variances assumed	-3.221	<.001	.001
	Equal variances not assumed	-3.051	.001	.003
I prefer Spotify because there is a free- with ad version as Apple does not.	Equal variances assumed	-3.181	<.001	.002
	Equal variances not assumed	-3.018	.002	.003
	Equal variances assumed	-2.533	.006	.012

I chose Apple music because it allows me to view what my friends are listening to.	Equal variances not assumed	-2.526	.006	.013

Hypotheses H7, H8, and H9 are supported because all the tests show significant differences, and females have the higher score in each case.

Managerial Implications:

As mentioned above, the purpose of segmentation analysis in marketing is to note that, where differences exist, a targeted marketing strategy is far more effective than a one-size-fits-all approach. The results found above will help managers use segmentation to reach female or male customers more effectively.

Student-status-based Hypotheses:

H10: Student Gen Zers are more likely to prefer Spotify because of Spotify's wrapping feature

H11: Student Gen Zers are more likely to prefer Spotify because of Spotify's free with ad version

H12: Student Gen Zers are more likely to prefer Spotify because of Spotify's feature of allowing users to see what their friends are listening to

	Are you a student?	N	Mean
I look forward to seeing mine and my friends Spotify Wrapped at the end of the year.	Yes	159	4.02
	No	46	3.80
I prefer Spotify because there is a free- with ad version as Apple does not.	Yes	155	3.38
	No	43	3.44
I chose Apple music because it allows me to view what my friends are listening to.	Yes	130	3.02
	No	35	2.43

		t	Significance One-Sided p	Two-Sided p
I look forward to seeing mine and my friends Spotify Wrapped at the end of the year.	Equal variances assumed	1.064	.144	.288
	Equal variances not assumed	.991	.163	.325
I prefer Spotify because there is a free- with ad version as Apple does not.	Equal variances assumed	-.273	.392	.785
	Equal variances not assumed	-.315	.377	.753
I chose Apple music because it allows me to view what my friends are listening to.	Equal variances assumed	2.494	.007	.014
	Equal variances not assumed	2.579	.006	.013

Hypothesis H12 is supported because the result is significant, and Students have the higher score.

H10 and H11 are not supported because no significant differences are found between students and non-students (though students do have the higher score in the case of H10).

Managerial Implications:

The results found above will help managers use segmentation analysis to reach student customers, who constitute an important customer segment.

Conclusions

"How many months have you been using a music app, like Spotify or Apple Music?"

The data shows a wide range of how long people have been using music apps. The median is 60 months (about 5 years), which 14.5% of respondents reported. Other popular durations are 48 months (12.3%) and 72 months (6.2%). This data indicates that a solid number of users are loyal and have been with their chosen service for several years. That said, there are also users who have only been using the app for a few months, with some as little as 1 to 3 months. The mean found amongst respondents is 69 months, translating to 5 years and 9 months.

“I look forward to seeing mine and my friends Spotify Wrapped at the end of the year.”

The data indicates that applicants strongly enjoy the Spotify Wrapped feature, with 69.4% of respondents agreeing or strongly agreeing. This demonstrates that Wrapped is a very useful engagement tool. The mean of this variable is significant at 3.98. On the 5-point scale with 1 being strongly disagree and 5 strongly agree, this is on the positive end of the spectrum.

“Overall, I prefer Spotify over Apple Music.”

According to the data above, combining the strongly agree and agree response, 55.55% prefer Spotify of Apple Music. This data proves that amongst the sample- size of 290 people, Spotify is the leading music streaming service with quite a large margin. Additionally, the average response on a 5-point scale, 1 being strongly disagree and 5 being strongly agree was 3.43. This tells us that the 290-sample size has a positive view of Spotify overall.

“I would recommend Spotify to friends and family.”

The data above shows that an overwhelming 52.425 of people from the sample of 290 people say they would recommend Spotify to their friends and family. However, on the other side of the spectrum, only 31.59% of people say they either disagree or strongly disagree. Furthermore, the average response on a 5-point scale, 1 being strongly disagreed and 5 being strongly agreed was 3.35. This tells us that the 290-sample size has a slightly positive view of Spotify and wanting to recommend the app to their friends and family.

Hypothesis Tests of Differences between Means

Several interesting results were found in terms of significant differences between younger and older respondents, females vs. males, and students vs. non-students. These results will help managers use segmentation effectively to target customers of interest.

Although the majority of the Spotify specific questions did not have a significant difference in the gender segments, we found that these three specific ones did. First, “I look forward to seeing mine and my friends Spotify Wrapped at the end of the year.” Second, “I prefer Spotify because there is a free- with ad version as Apple does not.” Lastly, “I use Spotify for the wide variety of podcasts that are available on the platform.” This is good data for Spotify to consider with their advertising. Understanding that these sections appeal to

women can help in certain ways, however they need to find a way to grow male engagement. This can be done through more male specific advertisements or a more in-depth survey as to why the male rate is so much lower than the female rate.

Regression: "I would recommend Spotify over Apple Music to my friends and family."
The dependent variable chosen for the equation is "I would recommend Spotify over Apple Music to my friends and family." We can only explain 59.5% of this dependent variable, while the 40.5% could be random or staggering variables unrelated to this equation causing effects that were unable to control. With that, we have found that most effective variable in this final equation is "I use Spotify for its "jam session" feature." With a regression coefficient of 0.691, this variable has a larger effect on whether someone would or would not recommend Spotify to their friends and family. Whereas "I use Spotify because of the $5.99/month Student Plan pricing." has a slightly smaller effect of 0.519 and "It is important to have the brand name 'Apple' on my music app" has an even lower effect of 0.34.

Recommendations

Based on the first conclusion, it is recommended that Spotify continues its work of keeping their current customers satisfied with its platform, while also creating a fresh new approach to attract new customers from other platforms. With such a large majority of people staying loyal to their platform, we would recommend looking at ways to attract new customers. This can be done by offering special deals for long-term listeners or showcasing them in advertisements. They need to up their "appreciation" for their longtime customers. This would also bring more appeal to new customers as to one of the many benefits and why they should join the Spotify family.

With respondents showing a very high approval of the Spotify "Wrapped" feature within the app, we would recommend that Spotify continue the great work it has done with this feature. Although there is a lot of positive data regarding the Spotify Wrapped feature, it would be useful to keep people interested. This could be done by using this feature at another time of the year or in more detail for the user. There needs to be a reminder of this feature, maybe

adding a “competitive” feature of “Who in your circle of friends listened more?”. Something like this would keep people engaged longer and allow for encouragement to join Spotify.

With the variable of whether or not respondents prefer Spotify or Apple Music, there was a very slight increase in Spotify favor. This is good for Spotify and what they have been doing is working. However, they should work to increase that number. The information from the other recommendations is more specific in ways as to how they can increase their user numbers and appeal to the Apple Music user side as well.

The most important and common way people find things is through their friends and family. Although the number does favor Spotify in the fact that more than half of the respondents would recommend Spotify to their friends and family, that number could be raised significantly. This could be done by leaning into the fact that users would recommend this, maybe by offering more family friendly advertising or deals and programs when someone recommends another user to the app.

We would recommend to Spotify to continue with what is it doing to appeal to women on the three variables mentioned in the conclusion. These were “I look forward to seeing mine and my friends Spotify Wrapped at the end of the year.”, “I prefer Spotify because there is a free- with ad version as Apple does not.” and “I use Spotify for the wide variety of podcasts that are available on the platform.” We would also recommend that Spotify find ways to bring in more male engagement, and this can be done through male specific advertisements and conduct surveys on why there is such low male engagement.

Based on the regression conclusion, we can see that Spotify’s “Jam Session” part of the app was the largest reason users would recommend Spotify to their friends and family. This is great for Spotify. However, the other factors of student pricing and the lack of importance in the label “Apple Music” need to be investigated. First, Spotify needs to really advertise and amplify the cost of the student pricing and what a deal it is. It would be helpful to gain more recommended followers. They should also capitalize on the fact that people do not care about the Apple label and make the brand name of Spotify appear as a luxury and that although the Apple label may not be impactful, the Spotify label is. This would be a useful tactic to gain more recommendations.

The overarching theme of the analysis is that respondents would recommend Spotify over apple music and would recommend this to their friends and family. With that however

most users that were Spotify positive were female. Spotify should consider having more male centered advertisements and research done as to why female usage is higher than male usage. As stated above, there are many ways to engage their users to raise Spotify over Apple Music preference percentage.

Limitations

We used a convenience sample rather than a random sample. The reason why a convenience sample can be a problem is because it is a “non-probability” sample, meaning it is not fully random. This may have produced bias by getting our answers from easily accessible users rather than a more general population. Given more time and resources, we would have tried to find ways to get a more unbiased sample like assigning names to a random number generator and picking them from there. For example, someone who is more likely to participate may have a higher regard for Spotify over Apple Music, and that is the reason why they wanted to participate.

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