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"What Makes ChatGPT Dangerous is Also What Makes It Special": High-School Student Perspectives on the Integration or Ban of Artificial Intelligence in Educational Contexts

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Abstract

The emergence of ChatGPT, an AI-powered language model, has sparked numerous debates and discussions. In educational research, scholars have raised significant questions regarding the potential, limitations, and ethical concerns around the use of this technology. While research on the application and implications of ChatGPT in academic settings exists, analysis of the perspectives of high-school students are limited. In this study, we use qualitative content analysis to explore the perspectives of high-school students regarding the integration or ban of ChatGPT in their schools through the lens of the Technology Acceptance Model (TAM2). Data was sourced from students' comments to a New York Times Learning Network article. Findings revealed that students' perceptions about integrating or banning ChatGPT in schools are influenced by their assessments of the technology's usefulness, personal experiences, societal technology trends, and ethical considerations. Our findings suggest that student perspectives in this study align with those of educators and policymakers while also possessing unique perspectives that cater to their specific needs and experiences. Implications emphasize the significance of an inclusive decision-making process around the integration of AI schools in educational contexts, including students alongside other stakeholders.

Introduction

In late 2021, ChatGPT was released to the public, rapidly attracting 1 million users within 5 days and 100 million users within the first few months (Milmo, 2023). ChatGPT is a large language model developed by OpenAI (https://openai.com/) to generate human-like text based on the input it receives. Individuals around the world have used this technology for a wide range of tasks, such as generating cooking recipes, creating stories, generating humor, writing articles, business proposals, and academic endeavors. (Fedewa, 2023; M. Holmes, 2023; Singer, 2023; Waxman, 2023; Zinkula & Mok, 2023). However, with the growing use of ChatGPT comes a growing concern about whether or not it should be used in education (Benuyenah, 2023, 2023; Li et al., 2023; Rudolph et al., 2023; Sallam, 2023).

Recent research seeks to understand the applications and implications of ChatGPT in educational contexts. Some

studies have experimentally explored the potential of ChatGPT in educational settings, highlighting its applications in areas like language instruction, programming, and personalized tutoring (Baskara & Mukarto, 2023; Kohnke, 2023; Rahman & Watanobe, 2023). Rahman & Watanobe, (2023) investigated how ChatGPT can help students improve their programming skills, focusing on the learning opportunities ChatGPT can offer students in higher education. Other scholars (Lo, 2023; Sullivan et al., 2023; Temsah et al., 2023) have reviewed existing literature to understand the benefits, opportunities, limitations and challenges of ChatGPT in education. Additionally, researchers have investigated how ChatGPT is influencing higher education by considering the viewpoints of educators as they appear in the media.

However, students' viewpoints have had limited representation in research about ChatGPT and the recent expansion of AI into our daily lives. Sullivan and colleagues' (2023) findings revealed that student voice was less represented in the articles compared with the perspective of university leaders that was primarily portrayed in the research. Among the few studies that do consider student perspectives, the majority emphasize students in higher education, leaving out the insights of high school students (Lo, 2023). Furthermore, the research that does include high school student voices typically involves small sample sizes (Forman et al., 2023; Nayak et al., 2023) and centers around perceptions based on experimental studies within classroom settings (Bitzenbauer, 2023; Elkhodr et al., 2023; Shoufan, 2023). Not much is known regarding students' views, opinions, and perceptions towards ChatGPT in the high school context or whether they are interested in utilizing the tool at all. Since students are or will be the main users of ChatGPT in classrooms, their experiences, insights, and concerns are crucial for making informed decisions about incorporating ChatGPT into their classrooms. Therefore, it is important to include the voices of high school students in ongoing discussions about the role of ChatGPT in education, ensuring their perspectives are heard and considered.

One of the ways high school students voice their opinions and interact with others socially is through online media. Print and online media, such as newspaper articles, can reflect different stakeholders' perceptions of education in various contexts (Baroutsis, 2019) and identify potential educational issues that need to be addressed within society(Coe & Kuttner, 2018). Research shows that user data in the form of user comments from print and online media has been valuable in developing theories in education, politics, and society(Panagiotopoulos et al., 2017; Vaast & Urquhart, 2017). Additionally, this user data has provided insights into ongoing societal discussions and debates related to various social and educational movements (Hanna, 2014; Mockler, 2020; Rohlinger et al., 2012; Rucht & Neidhardt, 1999). Therefore, sourcing student opinions from international news outlets not only provides access to a diverse group of students but also offers data that sheds light on their views regarding prominent societal issues such as ChatGPT in education.

In this study, we explore student comments responding to an online article in the New York Times, which is a popular media outlet. The New York Times publishes a Student Opinion section, in which thousands of teenagers worldwide engage in discussions on various topics every week. By exploring the conversations mediated through this medium, our research objective is to amplify high school students' voices and perspectives in the discussion about whether or not ChatGPT should be used in their schools and gain insight as to what variables may influence these perspectives. Using the Technology Acceptance Model (TAM2) framework (Venkatesh & Davis, 2000) as

a theoretical lens, we analyze the responses of high school students from around the world to an article that was published in the New York Times Learning Network on January, 24 2023, about ChatGPT in schools. The research question guiding this study is:

> *How do high school students perceive the adoption or ban of ChatGPT in schools, and what influences their stance?*

Theory and Background

In recent years, large language model-based chatbots have played an increasingly significant role in shaping the way we learn and interact with the world around us. ChatGPT is a large language model-based chatbot which generates human-like texts and conversations based on a given prompt and past conversations (Baki, 2023). The model was developed by OpenAI and is built on the Generative Pre-trained Transformer (GPT) architecture that analyzes extensive internet data to understand the intricacies of language, semantics, and lexical structures. Due to their expansive training data and sophisticated architectures, such models can address a wide range of topics and simulate human-like interactions more effectively than prior chatbot systems.

ChatGPT in Educational Settings

There is a rising interest among researchers to understand the role and utility of ChatGPT in educational contexts. This includes examining both its potential advantages and any challenges it might introduce when integrated into learning environments. Multiple studies have been conducted to explore the potential of ChatGPT across various educational levels, showcasing its utility in areas such as language learning (Baskara & Mukarto, 2023; Kohnke, 2023), programming (Nayak et al., 2023), and creative writing (Garrido-Merchán et al., 2023; Su et al., 2023). Kohnke (2023) examined the capabilities of ChatGPT in language education, highlighting its potential to identify meaning of a word in context, correct and explain language mistakes and offer dictionary definitions. Surameery & Shakor, (2023) investigated ChatGPT's capabilities within the context of programming problem-solving. Their findings indicated that ChatGPT can assist in identifying and fixing bugs, foresee potential errors, and offer solutions to address programming challenges. Several other studies have explored the usefulness of ChatGPT indicating its potential for personalized learning (Murgia et al., 2023) and supporting teaching tasks (Bitzenbauer, 2023; Smith et al., 2023) . In a study with 47 children aged 9 to 10 years, Murgia et al., (2023) investigated the potential of ChatGPT to personalize and support students' learning experience by providing tailored responses at the appropriate literacy level. The authors used prompts to elicit ChatGPT responses related to the primary school curriculum and children were asked to evaluate the readability of the responses using "Yes" or "No" responses and emojis to express their opinions. The study found that ChatGPT's responses were generally understandable to students, although there were challenges with unfamiliar words.

Beyond the benefits and usefulness of ChatGPT in classrooms, scholars have also raised concern about the ethical implications and risks associated with its use in educational settings. Scholars have highlighted issues related to privacy, bias, plagiarism, and academic integrity (Küchemann et al., 2023; Waltzer et al., 2023). In addition to ethical concerns there have been claims about possible limitations and potential negative effect on students' skill

development (Alkaissi & McFarlane, 2023; Farrokhnia et al., 2023). Alkaissi and McFarlane (2023) suggested that ChatGPT could inhibit students' development of important writing and creative skills when they consistently use the tool to develop outlines for class essays or written pieces. Similarly, Farrokhnia et al. (2023) argued that the use of ChatGPT could lead to the oversimplification of the learning process and affect students' motivation for independent thinking and problem solving. In response to the challenges associated with using ChatGPT in the classrooms, scholars and educators have proposed varied opinions, including; rethinking assessments (Rudolph et al., 2023), creating policies around use (Dwivedi et al., 2023; Farrokhnia et al., 2023), using AI detectors and in some cases banning its use (Pearlman, 2023; Yang, 2023). Cotton et al., (2023) suggested designing open-ended assessments that require students to demonstrate their critical thinking and problem-solving skills in order to prevent their use of ChatGPT. Lo (2023) also highlighted the need to update assessments strategies and school policies to address the challenge of AI-generated content in students' work. Kasneci et al., (2023) argue that rather than banning the use of AI tools, educators and policymakers should focus on providing incentives and support for the development of curricula that require the creative use of large language models for inquiry, hypothesis testing, and critical thinking. This current body of research on ChatGPT primarily revolves around two main areas: first, understanding how ChatGPT can be beneficial for teaching and learning (Baskara & Mukarto, 2023; Bitzenbauer, 2023; Kohnke et al., 2023; Surameery & Shakor, 2023) and second, highlighting the potential limitations and ethical concerns of using it in educational settings (Cotton et al., 2023; Dwivedi et al., 2023; Kasneci et al., 2023).

Technology Acceptance Model 2 (TAM 2)

To understand students' viewpoints on the use of ChatGPT, we frame this study using The Technology Acceptance Model 2 (Venkatesh & Davis, 2000), which is a widely recognized theoretical framework used to understand and predict how users accept and adopt new technologies. The original TAM model suggests that the successful adoption of new technologies hinges on two key predictors: perceived usefulness (the degree to which a user believes that using the technology will enhance their performance) and the perceived ease of use (how much a user believes that using the technology will be free of effort). For a new technology to be embraced and utilized effectively, users need to find it both beneficial and easy to use. The revised TAM model: TAM 2 (Venkatesh & Davis, 2000) recognizes that beyond perceived usefulness and ease of use, external factors, job relevance, output quality, result demonstrability, and voluntariness play significant roles in shaping users' attitudes and intentions toward adopting new technologies. (Abbas, 2016; Halawi & McCarthy, 2008). For instance, studies show that subjective norms—essentially the perceived social pressures to use or not use a particular technology—can have a positive impact on perceived usefulness (Choi & Chung, 2013; Jin, 2014; Lee & Wan, 2010) and is a key determinant of behavioral intention to use (Bonsu & Baffour-Koduah, 2023; Park, 2009). In the context of education, if teachers or students believe that their peers or superiors view the use of a particular technology as beneficial or essential, they are more likely to perceive that technology as useful for themselves. Additionally, studies indicate that user experience with a technology can have a positive effect on its perceived usefulness (Wingo et al., 2017). In education, if teachers or students become more familiar with a certain technology through hands-on experience, their perception of its utility tends to increase. This perception of increased utility can be attributed to a deeper understanding and appreciation of the technology's features and capabilities and the

realization of its practical benefits. Other TAM 2 based studies have demonstrated how external factors including the relevance of the technology to specific tasks and demonstrable results of using the technology can also be pivotal factors driving adoption (Abbas, 2016; Jin, 2014; Wu et al., 2011). These external factors extend the TAM 2 framework for analyzing the complexities of technology acceptance in educational contexts.

While TAM has traditionally been operationalized quantitatively (Davis, 1989), researchers have also explored its applicability using a qualitative approach to capture context-specific insights and better understand users' intricate attitudes, beliefs, and motivations towards technology adoption (Huang et al., 2019; Portz et al., 2019; Zhu & Zhang, 2022). We take a qualitative approach to the application of TAM in this study given the investigation of ChatGPT in educational settings is still a nascent, evolving area and fraught with uncertainties, it is important to capture the perspectives of students in its rich qualitative form. The nature of the data in this study — comments from a broad spectrum of high school students on a renowned platform — warrants a qualitative approach as the complexities around students' conversations might not be captured fully using purely quantitative metrics. Students' discussions on online platforms, such as The New York Times Learning Network, reflect descriptions of their ideas and lived experiences. This rich data offers an opportunity to delve deep into their sentiments, apprehensions, and aspirations around the adoption or ban of ChatGPT in schools.

Methods

Data Collection

In order to capture student voice in regard to their perceptions of whether or not to use ChatGPT in schools, data was collected from high school students' comments to a Student Opinion post in the NY Times' Learning Network: "How Should Schools Respond to ChatGPT?" (Schulten, 2023). The Student Opinion feature of the NY Times' Learning Network, is offered as an educational resource. This resource provides teachers ways to incorporate topics from real-world scenarios into school activities, aiming to support the development of critical thinking and writing abilities in students. Each school day, the student opinion page (NY Times. 2020) features a new question, derived from a New York Times article, spanning a range of subjects. These questions are utilized in classrooms for various purposes, such as initiating discussions, debates, or serving as writing prompts, potentially contributing to the enhancement of persuasive, argumentative, and narrative writing skills. The structure of the student opinion questions begins with general introductory questions, followed by an excerpt from the article, and concludes with 3 to 7 reflective questions. These reflective questions are designed to encourage deeper exploration of the topic, allowing students to respond from different perspectives, including their personal experiences. These articles are intended to reach and engage with "Students 13 and older in the United States and Britain, and 16 and older elsewhere." Responses undergo moderation by NY Times personnel, thereby ensuring that only authorized, civil contributions are made for the public.

The sampling of data was purposive in that the online news article, from which data was collected, emphasized youth opinions and perceptions concerning the use of ChatGPT in schools. In the opinion piece, *"How Should Schools Respond to ChatGPT?",* NY Times author Katherine Schulten (2023), references a previously written article titled *"Don't Ban ChatGPT in Schools. Teach With"* (Roose, 2023). Student readers were prompted to read

Roose's article, which discusses the controversy surrounding the use of ChatGPT in schools, and then share their opinions and perceptions by responding to prompting questions, such as: *Have you experimented with ChatGPT, whether in school or on your own? How promising or useful do you think it is? Why do you think many educators are worried about it? What "negative impacts" can you imagine? Should teachers "thoughtfully embrace" this technology?* The data collected in this study consists of the multiple student responses to this article or to another student's post. At the time of data collection on Aug 23, 2023, we collected a total of 660 high school student comments, which comprised 545 initial responses and 115 replies to comments. Students provided their name and geographic location; however, we do not report these for this study. Instead, personal identifiers, such as usernames, were anonymized to protect the privacy of commenters.

While not specifically mentioned on the webpage, the student population engaging with the student opinion feature, can be hypothesized based on certain indicators. It is plausible that the demographic of students commenting on this page may predominantly come from higher socioeconomic status (SES) schools. This projection is informed by existing research (Warschauer & Matuchniak, 2010; Ching, et al., 2005) indicating that students from higher SES backgrounds often have greater access to digital platforms and resources for academic engagement. In addition, it is reasonable to infer that the majority of students participating in the Student Opinion feature are likely from English-speaking regions. This inference is supported by the language of the content; as the feature is based on New York Times articles, which are predominantly in English, it naturally appeals to and is more accessible for students who are proficient in English. Therefore, while the feature may attract a global audience, the demographic is likely skewed towards students from English-speaking countries or regions where English is a primary medium of instruction.

Table 1. Students' Geographical Location as identified in the user id as at the time of data collection on Aug 23, 2023

Country	**Number of responses**
US	545
Amsterdam	2
Bulgaria	7
Belgium	13
Israel	21
Taiwan	51
Philippines	1
Spain	1
Not specified	19
	660

Data Analysis

In order to better understand student perspectives on the acceptance or banning of ChatGPT in schools, we employed qualitative content analysis. Hsieh & Shannon, (2005) defined qualitative content analysis as a

"research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns" (p. 1278). In other words, researchers collect text data, such as newspaper articles or interview transcripts, and search for themes or patterns within the data that could help with meaning making of the qualitative data. This process helps identify communication trends and patterns for individuals and groups within different contexts. Qualitative content analysis was used in this study to help identify the focus and communication trends of high school students regarding acceptance or rejection of ChatGPT technology.

Coding and refining theme categories was collaborative throughout data analysis and took place in multiple stages (Figure 1). We started by familiarizing ourselves with the dataset by reading through all the comments multiple times. This process helped in gaining a holistic understanding of the content. Then, the complete transcripts of the students' comments were copied and loaded into DeDoose (https://www.dedoose.com), an online analytical tool for coding.

We used a directed-deductive content analysis approach in that we used an existing theory, Technology Acceptance Model (TAM2), as guidance for identifying key concepts and establishing initial categories to code (Zhang & Wildemuth, 2005). These categories and definitions were based on constructs in the TAM2 framework for perceived usefulness and perceived ease of use: Subjective Norm, Job Relevance, Intention to Use, Image, Experience, and Voluntariness. Researchers deployed a line-by-line coding approach for coding. If one sentence alone did not fully express the student's idea, multiple lines were chosen (Minichiello et al., 1990).

Three researchers separately coded the dataset using DeDoose and collaborated with each other 1-2 times/week. Categories were modified as new patterns emerged inductively throughout the coding process (Miles & Huberman, 1994). As we coded, we found that there were some constructs in the TAM2 model that were not represented in the dataset, namely, image and voluntariness. So, these categories were removed from coding. As we compared and contrasted coded data across different comments, we refined our thematic categories and identified additional patterns in the data. Based on these patterns, we identified three new primary categories: Ethical Concerns, Negative Effects on Student Learning, and Limitations of ChatGPT.

Through more coding and discussion, we refined the primary categories into subcategories. For example, Ethical Concerns had the subcategories of misuse, cheating, and inequities. The result was 8 primary categories and 13 subcategories (Table 2). The researchers continued to code the dataset until theoretical saturation was reached in that no new issues, categories, or themes emerged (Hennink et al., 2017). In the final analysis process, two of the researchers looked for any patterns or connections between primary categories. This process led to identifying five final themes:

(1) ChatGPT as a useful tool for teaching and learning
(2) Technology prevalence and comparison with older technologies;
(3) Negative Effects of Chat GPT in Education;
(4) Ethical Considerations; and
(5) Student's Suggestions for ChatGPT implementation in schools.

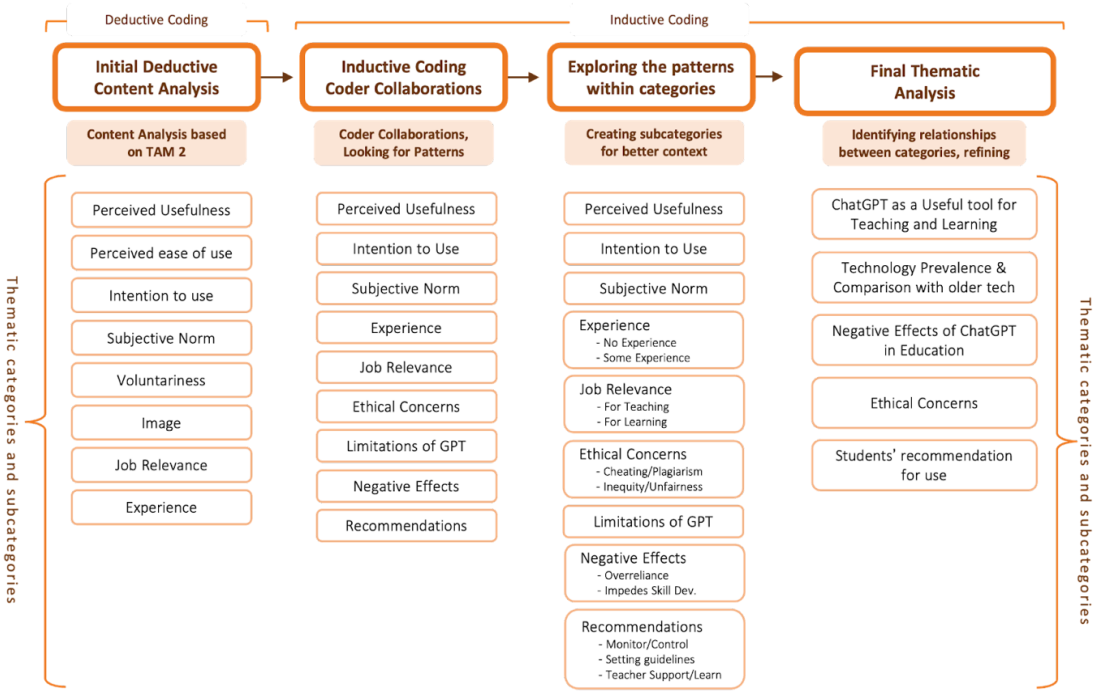

Figure 1. Qualitative Content Analysis Process for this Study

Table 2. Primary Categories and Subcategories Prior to Final Analysis

Primary Categories & Subcategories	**Definition**	**Example Student Comment**
Subjective Norms	Student comments that indicate social pressure or influence from their peers, friends, family, or society to adopt or use Chat GPT. Includes comments about AI being an unavoidable technology	*"We need to realize that this is only the beginning and we can never beat A.I., ever. What needs to happen is to learn how to use the A.I. and adapt to using it"*
Job Relevance: - For Learning - For Teaching	Comments that indicate how or why ChatGPT can be used for Teaching. Or comments indicating how and why it can be used for learning (completing coursework, conducting research, finding resources, etc.)	*"ChatGPT is relevant to my assignments because it helps me find relevant sources and ideas for my essays."*
Experience: - Some Experience - No Experience	The extent to which a student has previous experience or familiarity with using ChatGPT.	*"I've used ChatGPT so many times to help me write homebrew in D&D"*
Intention to Use: - Acceptance / Integration - Ban / Discouragement	This includes comments about a student's willingness to use ChatGPT or their advocacy for schools adopting or embracing this technology. It can also include their advocacy for a ban of ChatGPT.	*"I think that ChatGPT is a great educational tool for everyone and teachers should embrace it."*

Primary Categories & Subcategories	**Definition**	**Example Student Comment**
Ethical Concerns: - Cheating / Misuse - Promotes Inequities and Unfairness	Utterances about the ethical and moral implications of using ChatGPT in schooling (cheating, plagiarism, misuse, giving or taking away a student's academic advantages, academic dishonesty, fairness, etc.	*"..not only does it encourage cheating in school, but it can also encourage cheating later on in life"*
Negative Effect on Student Learning: - Overreliance - Impedes Skill Development & Practice	Comments about the negative effects of using ChatGPT. Comments include promoting laziness, impeding writing skills, reducing creativity, imagination and analytical skills or overreliance	*"because it takes away critical thinking skills that are required to craft academic work"*
Limitations for ChatGPT Tool	Comments that suggest ChatGPT has inherent limitations (making errors, providing incorrect information, non-sentient nature, etc.)	*"I doubt it could truly be capable of having the same thoughts a human could."*
Recommendations for Use: - Monitored / Controlled Use - Teacher Support / Learning to Use - Setting Guidelines	Comments discussing recommendations for using ChatGPT in schooling (monitored or controlled use, teaching students to use ChatGPT; putting policies and guidelines in place for using ChatGPT in the schools, using ChatGPT in a proper, intentional, or directed manner.	*"We need to implement these ethical guidelines to outline what you can and cannot do with this in school."*

Results

From the data analysis in this study, five main themes were identified: (1) ChatGPT as a useful tool for teaching and learning (2) Technology prevalence and comparison with older technologies; (3) Negative Effects of Chat GPT in Education; (4) Ethical Considerations; and (5) Student's Suggestions for ChatGPT implementation in schools.

ChatGPT as a Useful Tool for Teaching and learning

One of the main themes that recurred in this analysis was the discussion about ChatGPT as a useful tool for teaching and learning. This perceived usefulness provides insight into how high school students might accept this technology and want to adopt it into their classrooms.

As a Teaching Tool

Students commented on how ChatGPT could help teachers complete different job-related tasks such as providing feedback, grading, developing lesson plans, and planning classroom activities. For example, one student commented that *"It can also be used to grade and create prompts, this would cut down the time it takes to review multiple classes worth of lengthy essays. This could save time for the teacher and give the student better and more*

extensive feedback." Here the student points out the tool's capacity to save the teacher's time while also giving more thorough feedback, indicating the student's positive perception of ChatGPT being used in school. In another example, one student wrote, *"...Teacher's can use this app when necessary to help grade, or make lesson plans to save themselves time but are never forced to use this as the only way to run the classroom."* These comments suggest that this student believes that ChatGPT will be useful in schools because teachers could do their jobs more efficiently, and they do not have to use it or be *"forced to use it"* for every aspect of their job. In other words, the teacher would (or should) have a choice in how ChatGPT is used in their classrooms.

Some comments suggest that if teachers used ChatGPT in the classroom, students could experience the advantage of receiving more personalized and valuable feedback on their assignments. For example, one student wrote, *"it seems like a useful source for both teachers and students, it makes the process of grading easier and it can personalize the lesson for each student making it a lot easier for each student because everyone doesn't learn the same exact way. Even the grading gives feedback that most teachers struggle to give on their own."* Another student supported the benefits of feedback and personalized learning by saying, *"people should look further into what ChatGPT can actually do because this artificial intelligence bot can do some pretty cool things. Some teachers can use this technology for making personal lesson plans for students so that they can be more successful. Or some teachers can use it to give highly detailed feedback on a student's work."* These students' comments suggest that they prefer highly detailed feedback, and ChatGPT can be a useful tool for teachers to provide feedback and create personalized lesson plans for students.

As a Learning Tool

In addition to being a tool for teaching, student comments reflect how they could use ChatGPT in their academic work. These students see ChatGPT as a useful resource for completing their school assignments and improving their quality of work. For instance, one student stated, *"ChatGPT can provide students with instant access to a vast amount of information and knowledge, which can help students expand their understanding of subjects they are studying. This can be especially useful for students who struggle to find the information they need,as ChatGPT can provide quick and accurate answers to their questions."* This comment suggests that this student perceives ChatGPT as a resource to help them better understand a concept or a subject in a rapid manner, highlighting how perception of the technology's usefulness can also be affected by its perceived ease of use. In other words, the rapid or "quick" nature of ChatGPT allows student users to quickly and efficiently find information they need to do their school assignments. Other students also indicated that the speed of which they can obtain information and receive feedback is a factor in why they would adopt the tool in the classroom. For example, another student wrote, *"I do think however schools should not block the website, though many students can access through different devices, it can a be good tool for quick essay checks. Quickly proofreading an essay and finding any mistakes instead of having to wait on a teacher to check with."*

In addition to being a good resource tool, some students perceived ChatGPT as being useful for improving their writing skills, encouraging their creativity skills, and aiding in knowledge construction. One student explained how they thought ChatGPT would affect students' writing: *"if this technology is used correctly I think it could be*

revolutionary to the educational world. This piece of technology could help improve students' vocabulary, writing strategies, and be a portable tutor to all students struggling in the writing world." Another student emphasized *"Students can use it as a review or "extra help" tool. Students often need extra review or even the answer to a question so they can know how to solve it in the future and understand the subject better. AI can teach students at a deeper, more personalized level that sometimes teachers can't. As someone who isn't particularly good at math, having AI that can give me the answer and at the same time explain how to do it could help me."*

These comments suggest that these students not only appreciated ChatGPT as a tool to use for knowledge, skill development, and help with writing, but they also referred to it as an active tool that could "teach students or be a "portable tutor." These statements suggest some students may attribute human-like qualities to this AI tool.

Experience with ChatGPT

We also discovered that students' perceived usefulness of ChatGPT was influenced by their experience with the technology. In other words, students formed opinions about the benefits of ChatGPT for learning based on their direct, personal experiences using the technology. For example, one student wrote, *"I have seen others use and have used ChatGPT myself, as a strong study tool. It is very useful for summarizing information and generating examples that relate to what I'm working on. I think it's very helpful, though I always make sure to check and see if the information that I'm being provided is accurate, or else I'd be learning the wrong thing."* Here, the student indicated that they accept ChatGPT as a learning tool because it has already helped them in this area. The student also demonstrated an understanding of one of the downfalls of this tool in that there is potential for the AI bot to provide inaccurate information. Other students also noted that although their experience with ChatGPT was positive, there are potential negative effects. One student wrote, *"I have used Chat GPT a number of times to test its capabilities. I was very impressed with its ability to write essays, including essays using sources. I understand that this would not necessarily be ideal for a school environment where students are meant to create their own essays and develop writing skills by doing so. However, it can also be used to give essay outlines, which I could see as being incredibly helpful for students."* In this statement, the student expresses their positive experience with ChatGPT in the area of writing, but they also commented on the potential of the tool limiting a student's writing skills because *"students are meant to create their own essays and develop writing skills by doing so."* Even with this understanding of the potential limitations of ChatGPT, the student says the tool would still be useful in school because it could be used for outlining essays.

Other students experienced ChatGPT through the experiences and perceptions of someone else in their lives, such as a sibling, a classmate, or a teacher, and this contributed to positive thoughts regarding the tool. For example, one student experienced ChatGPT for the first time while in class by watching another student's demonstration using the technology: *"...one of my classmates demonstrated to the whole class how Chat GPT works. Based on the results, it pretty much will help you in any way for any possible scenario. For example, wedding vows, break up letters, essays for a class, ect."* This student was able to form an initial positive impression of ChatGPT by seeing it in action by someone in his immediate life. The statement also suggests that using this tool for education was acceptable by some teachers, such as this teacher who allowed a student to demonstrate its usefulness to other

classmates. Another student first experienced ChatGPT first through their sibling: *"My brother who's in college first showed me this website, and said at his school, it's already being used among almost every student. I tried it out for background on some research I had in one of my classes, and it turned out to be extremely helpful."* In this statement, the student provides insight in that using ChatGPT in school is a subjective norm in his brother's experiences. Hearing from their brother that the tool is acceptable to use for school and that it's already being used among every student, may have influenced the student's intention to use ChatGPT for one of their classes. The student expresses a positive perspective toward the usefulness of the technology because it turned out to be extremely helpful.

Finally, some students' only experience with ChatGPT was through the reading, reflections, and discussions of the NY Times article. One student mentions, *"Before reading this article I had never heard of any of the ways teachers could use this tool, but now I'm aware of how teachers can use the tool for faster, easier and more in-depth grading."* This student's experience involved an online discussion that provided them with enough information to see the positive potential of ChatGPT for faster, easier and more in-depth grading. This statement suggests the student found the tool helpful because it was easy and efficient to use. After reading the article, another student wrote, *"I have never used ChatGPT but it seems like a useful source for both teachers and students, it makes the process of grading easier and it can personalize the lesson for each student making it a lot easier for each student because everyone doesn't learn the same exact way. Even the grading gives feedback that most teachers struggle to give on their own."* This statement indicates the student formed a positive impression about the usefulness of ChatGPT through engaging in reading and discussing an article.

Technology Prevalence and Comparison with older Technologies

Prevalence

Another theme that emerged from students' perspectives revolved around the inevitability and growing prevalence of AI technologies in society. Students emphasized that AI tools such as ChatGPT, are becoming an integral part of our daily lives and are set for continued growth and integration. For example, one student stated, *"I think it is important to remember we live in the 21st century where technology is moving forward... and programs like this are going to keep popping up."* Another student stressed the permanence of AI saying that, *"The fact is **A.I isn't going anywhere** anytime soon and they will progress to be out of our imagination"* These statements highlight a collective sentiment among the group of students, suggesting that AI will continue to advance and become more integrated into society. Furthermore, students highlighted the futility in restricting ChatGPT use within educational institutions, given that *"these technologies"* are accessible to students outside school premises. One student remarked, *"..by restricting students from using Chat GPT, you are insinuating that this resource will never be available to them. In the world outside of school, students will need to be able to discover what kind of sources are valuable to them. This is an important skill to learn."* Consequently, these students call for schools to embrace AI in order to *"prepare students"* for entering *"a world that's going to be filled with chatbots such as ChatGPT"*. One student articulates this perspective by stating, *"The world will not ignore a tool that makes work easier, so it is important for schools to teach students how to use the tool."* In a similar vein, another student suggests a proactive strategy, in which schools and teachers fully embrace this AI technology, assess its

advantages and disadvantages, and utilize it to their advantage. This student emphasizes, *"We are just entering a new era of technology, and we can either ignore it until it is impossible to deny it longer, or we can embrace it and actually use it to help us rather than harm us."* This viewpoint suggests that schools take a proactive stance by embracing and integrating the technology, rather than waiting until its ubiquity makes it impossible to disregard.

Comparison with Older Technologies

Beyond the prevalence of ChatGPT, some students drew comparisons between ChatGPT and prior technological innovations such as calculators and Google, noting how they initially encountered opposition but later gained acceptance. For example, one student compares ChatGPT to the calculator saying *"Even though there were concerns about calculators when they were first invented…it allowed mathematicians to explore new areas of math that they hadn't been able to previously. I believe that the same goes for ChatGPT."* Another student points out that, similar to how calculators eventually found their right use in classrooms, ChatGPT may be beneficial for learning if its suitable use is established. The student remarks, "*Schools should adopt ChatGPT as a tool similar to how they have adapted to the calculator. Previous generations were worried the calculator would eliminate math by hand, but it has been utilized as a tool."* These students point out that initial resistance to calculators in education eventually gave way to their widespread acceptance and use, suggesting a similar trend for ChatGPT. Drawing comparisons with Google, a student commented, *"...things like this"* referring to ChatGPT "*have already existed. Google has been around forever now, and that didn't ruin education, did it? People thought the same thing when the internet became popular!"* This student argues that reservations existed when the internet first became widespread, but over time, it's become a fundamental part of the learning process. This student ends with a suggestion *"Maybe some sort of education tweaked edition of ChatGPT would be good for school."* In summary, these students liken ChatGPT to calculators and the internet, viewing these tools as revolutionary and when used appropriately, can significantly enhance the educational experience.

Negative Effects of ChatGPT in Education

Some student's express concerns that an overreliance on ChatGPT in and out of school can undermine skills such as critical thinking, creativity, and foundational writing skills. These students stressed that over-dependence on ChatGPT might inhibit students' capacity to develop and articulate original thoughts, which can lead to an underdevelopment of life skills. For instance, a student expressed a personal perspective saying, *"One of my biggest worries is that I would rely too much on these tools and lose the capacity for critical and creative thought. I personally want to learn how to communicate myself clearly and to find my own distinctive voice as a student."* This sentiment reflects the student's worry that consistently deferring to AI systems could diminish their aptitude for independent, analytical, and imaginative thinking. Echoing this sentiment, another student emphasized, *"...it takes away critical thinking skills that are required to craft academic work and ultimately harms the progression of students' important life skills."* Another student raised apprehensions about the *"dehumanizing"* effect of persistently deferring to AI over a span of decades commenting that, *"...If they constantly use the software to come up with opinion pieces and answers to questions then how will their ability to formulate their own onion*

change in the next 5 years? 10 years? Even 20 years? By then they won't ever have to think for themselves, and that idea is very dehumanizing."

In addition, students also worry that ChatGPT would diminish the human element of writing or have an impact on their writing skills. As one student emphasized, *"Writing is a fundamental skill that has helped humans learn to communicate and pass on their messages, thoughts, and feelings to future generations... If we allow students to use computers to write or communicate for them, they will lose the ability to express their opinions, thoughts, and feelings."* Consequently, these students advocate for a ban of ChatGPT in academic settings or suggest preventive measures to curtail its use. One student firmly stated, *"Chat GPT should be banned within schools and the technology and accessibility provided by them… It will be detrimental to the future generations as they won't even know how to write an essay or solve an easy math problem."* Echoing this sentiment, another student urged schools to *"take action"* saying; *"The schools must take action against this... **students will become overly reliant** on technology rather than their personal experiences and understanding...ChatGPT must be prohibited in educational environments."* These views highlight some students' worries about becoming too dependent on ChatGPT, fearing that this reliance may erode essential skills and diminish their independence in cognitive tasks.

Ethical Considerations

Plagiarism and Cheating

Some students were of the opinion that using ChatGPT not only promotes cheating and plagiarism but provides students with *"an easy way to cheat."* They emphasized that this *"ease"* was a result of ChatGPT's ability to generate responses with the *"click of a button"* and *"no payment,"* which made cheating easy and in the long run harmful to students. Consequently, these students argue that Chat GPT shouldn't be utilized in schools. One student commented, *"I do not believe that chatGPT should be used within schools… One main issue dealing with technology is cheating. Now more than ever students are able to cheat …this only hurts them in the long run and takes away work that teachers put lots of time and effort into."* This student argues that using ChatGPT makes it easier for students to cheat and is harmful to students in the long run. Another student shares a personal experience narrating her conversation with a classmate who claimed to have found an AI that could effortlessly generate needed information. The student commented, *"This is cheating. There is no other way to put it, and especially no way to excuse it… My only experience with an A.I. that could write "perfect" essays… is listening to the guy who sat next to me in world history bragging about how he found an A.I. that could write an essay about anything, it could draw anything, it could even write a movie script. I just sat and listened. I listened to him flaunt the most degrading invention to writing there has ever been."* This student is expressing strong disapproval towards the use of AI for academic writing labeling the use of ChatGPT as *"cheating"*. Furthermore, some students voiced that cheating can become a destructive cycle due to repeated use. They expressed that when students use ChatGPT to cheat on assignments instead of genuinely learning key concepts, the subject becomes more challenging, leading to a continuous cycle of cheating. For instance, one student commented, *"If Chat GPT makes up-and-coming students face a destructive cycle. Students who take advantage of the technology and cheat their way out of assignments meant to grow their learning. Without learning the key concepts, the class will continue to get harder, therefore students will continue to cheat."*

In addition, these students express concern about the accessibility of ChatGPT to young students, like those in elementary school. One student commented *"...that is what makes this bot even more dangerous. Students of all ages, including elementary schoolers, can access this website and build a habit of AI plagiarism from a young age."* This student notes that young learners, such as those in elementary school, can use this AI tool, which might lead them to develop a habit of relying on AI-generated content, which they equate to plagiarism, from an early age.

Imbalance and Unfairness

Some students also argued that using chatGPT in schools creates imbalance and unfairness in the classroom. They find it inequitable that students who invest time and effort in composing their papers independently could end up with comparable grades to those who use ChatGPT with considerably less effort. For instance this student expressed, *"this is extremely unfair because there are many kids that work hard and do their best to get a good grade without ChatGPT, but that will no longer matter because other students will have the same or better grade simply because they type questions into an AI and receive a perfect response in which they will copy ensuring that they will get a good grade. Also, this will make it so that many kids will be very good in school, therefore there may be less spots in good colleges for the students who properly did the work can go to."* This student is expressing that students who genuinely work hard and put in effort might be at a disadvantage compared to those who simply use AI to get perfect answers. One student described this as *"competing with an extremely fast and powerful AI?"*. These students worry that students who rely on ChatGPT might attain grades on par with those who put in the hard work of crafting their papers themselves, thus undermining the value of their efforts.

Student Suggestions for ChatGPT Implementation in Schools

Students also commented on how ChatGPT could be implemented into classrooms in safe and productive ways. Students' suggestions included creating and providing guidelines for its use, monitoring and supervision of its use, and educating teachers and students on the proper use of ChatGPT. Some students indicated that if ChatGPT were to be used in schools, there would be a need for explicit guidelines and ways to monitor or supervise its use. For example, one student asserted that *"In order to make sure that it does not get abused and to avoid serious educational consequences in society we need to implement these ethical guidelines to outline what you can and cannot do with this in school. Creating and enforcing these guidelines will be essential in order to make Chat GPT work inside schools."* Here, the comment suggests that this student not only recognizes potential ethical issues, they perceive these issues to be significant enough that, if not addressed, could have serious educational consequences in society. Despite their concern regarding the possible ethical implications of ChatGPT, this same student also advocated for its use when commenting, *"Schools should accept ChatGPT as a valuable educational tool…"* The perceived educational value of this technology contributed to the student's acceptance of it as an educational tool in school despite the potential ethical issues. Instead of not allowing it in school, the student suggests that it should be used-just with enforceable guidelines.

Some of these students stressed that it is the school's and teacher's responsibility to understand and teach students how to use the tool both productively and ethically. For instance, one high school student commented that *"ChatGPT has the possibility to be an excellent resource for students, if used correctly, and it can only be used correctly if taught by teachers."* Here, the statement suggests this student believes that ChatGPT requires training to be used in a correct way and it falls solely on the teacher to make sure this happens. Another student asserted that they thought *"schools should not ban ChatGPT. Schools should instead teach students how to use ChatGPT for good uses and that it's not good just to use it for getting quick answers."* This statement suggests that this student perceives ChatGPT as a useful tool, but the tool has potential for good or bad uses by students. Rather than say it should be banned in the school altogether, teachers and schools should educate the students on how this tool can be used properly and how this tool could be misused.

Several students recognized that teachers also need to be taught how to use ChatGPT effectively and ethically so that they can teach their students the same. For instance, one student wrote, *"Teachers and students can use chat GPT productively, ethically, and safely if certain precautions are taken. For example, teachers should be taught how to use this tool and interpret the suggestions provided by the website. It's essential to make sure that students understand the limitations of this and not to be taken advantage of."* This student indicates that it is the teacher's responsibility to protect the students so that they are not taken advantage of when using the technology. In order to teach students how to use ChatGPT productively, ethically, and safely, the teacher would need to first know how to use the tool and understand the limitations.

In this statement, the student states the teachers should be taught, suggesting that it is not reliant on the teacher trying to instruct themselves. Rather some other entities should be instructing teachers on the ethical use of ChatGPT in schools. Another student echoes this thought but with a focus on the potential for student cheating and the teacher's responsibility: "*Instead of being scared of the possibility of cheating and plagiarism, teachers should educate themselves on ChatGTP and its uses, then educate students on how to use this resource responsibly but efficiently."* Again, a student is expressing that it is the teacher's job to help the students know how to use ChatGPT properly, and instead of banning it from the classroom because of the risk of cheating, teachers should educate themselves on the benefits and uses of ChatGPT as an educational tool.

Discussion

This paper brings to bear students' voices in the ongoing discourse about integrating ChatGPT into their schools. We analyze comments made by high school students in response to an article that was published on the New York Times Students Opinion Feature of Learning Network, titled *"How Should Schools Respond to ChatGPT?"*
Our analysis uncovered a range of overarching themes derived from the data examined, indicating students have a multifaceted perspective on the adoption of ChatGPT in their schools. The first two themes introduce novel insights that go beyond the topics discussed in the article, reflecting students' unique perspectives and insights from students' conversations. These insights are not directly tied to the source article's content but represent broader reflections from the students. The remaining themes more closely reflect the issues raised by the author in the article. Students frequently agree with, or further elaborate on the issues presented in the article. Key themes

included:

(1) Not all students are interested in using ChatGPT, and they have strong concerns about unfairness.
(2) Students' first hand experiences with the technology shape their perceptions about the technology.
(3) Societal technology trends play a role in influencing adoption of new technologies in education.

In addition, concerns were raised about the potential for overreliance on ChatGPT leading to underdeveloped critical thinking and creativity skills, as well as issues of cheating, plagiarism, and academic unfairness. We discuss these themes in detail in the sections that follow.

Not All Students May Be Interested in Using ChatGPT and Have Strong Concerns about Unfairness

One new insight from our analysis is the perception of unfairness and imbalance among students regarding the use of ChatGPT in classrooms. This perspective stands out from existing literature which have primarily focused on ethical concerns associated with cheating and plagiarism (Cotton et al. 2023, Kuchemann et al., 2023, Sullivan, et al 2023). Some students opposed the integration of ChatGPT in their classrooms due to concerns about imbalance and unfairness highlighting important nuances in student perspectives toward ChatGPT adoption. Students perceived ChatGPT as "unfair" if others rely on ChatGPT to complete their work. Some students expressed the belief that the use of ChatGPT might create an unfair advantage for some students. Their argument is that students who use AI to get answers could achieve high grades with less effort compared to those who put in significant work and effort without such assistance. The students' perspective about "imbalance and unfairness' ' implies that students who take pride in completing their assignments independently may perceive the use of AI tools as compromising the integrity of their efforts and may resist on ethical grounds. This finding also suggests that high-performing students who are confident in their abilities may be less inclined to use AI tools, whereas students who struggle academically may see ChatGPT as a valuable resource. Future research should consider examining how the use of AI tools in the classroom varies among students of different performance levels and this can provide insights into the factors that influence AI technology adoption among students. This finding may also have implications for assessment and grading practices. Educators may need to consider developing alternative assessment methods that accommodate both students who choose to use AI tools and those who do not, ensuring fair evaluation for all. Recognizing that not all students may have the same preferences for using the ChatGPT or similar AI driven technology, educators should strive for learning experiences that allow students to choose the tools and resources that best suit their learning needs, while at the same, preparing them for a future in which the use of AI is inevitably.

Experience Shapes Positive Perceptions of ChatGPT

Students' personal experiences with ChatGPT offered fresh perspectives on how initial encounters with the technology can shape their views. These students' accounts provide insights into the various ways the students first interact with ChatGPT and suggest that these initial experiences influence their perception of the AI chatbot. By highlighting students' personal experiences with ChatGPT, our paper sheds new light on how students' initial encounters with ChatGPT shape their perceptions. This aspect is crucial because it moves beyond the general

discussions of AI in education, diving into the subjective and nuanced ways students have interacted with and form opinions about these technologies. Our findings indicate that first-hand experience plays a role in shaping student perceptions of ChatGPT and is related to positive behavioral intention towards ChatGPT's broader adoption. Students who have productively engaged with ChatGPT as a personal resource, such as the student who commented using ChatGPT as a *"strong study tool,"* or those who've observed its use by peers, siblings, or teachers are more inclined to support its broader use in academic settings. Thus, introducing students to ChatGPT in meaningful and responsible ways may help them see the usefulness of the tool and steer them towards leveraging the tool productively. Our finding is in line with Bitzenbauer's (2023) finding, where students' post-activity discussions showed a generally favorable view of ChatGPT following their classroom interactions with the AI chatbot. The students in Bitzenbauer's study noted that ChatGPT was useful for enhancing their critical thinking in physics. Given that experience with ChatGPT can shape perceptions and potentially lead to use, educators and policymakers should consider designing activities that provide directed and guided experiences with ChatGPT. Experience with the tool will not only help students understand the tool's capabilities and limitations but also equip them with the skills needed to use it responsibly.

Looking beyond the implications of how experience shapes attitude in TAM, our findings also indicate that students are engaging with ChatGPT outside the classroom, suggesting a broader application of AI tools in their daily lives. This AI Chatbot is becoming integrated into students' lived experiences, influencing their learning experiences beyond traditional educational settings. Students' engagement with the AI chatbot reflects a growing comfort with and reliance on AI for personal use, highlighting the potential for these tools to extend learning beyond formal educational settings and fostering self-directed and continuous learning habits. Additionally, this trend may indicate a shift in how future generations may accept and integrate technology into their lives outside of school settings, underscoring the importance of digital literacy and critical thinking skills in navigating an increasingly AI-driven world. Considering that students are utilizing ChatGPT independently, educational institutions and administrators have the opportunity to develop educational modules centered around ChatGPT. Learning modules can focus on guiding students on the effective use of the tool, as well as promoting critical skills such as questioning, verification, and cross-referencing of information provided by AI. This is in line with Kasneci et al., (2023) who argued that rather than banning ChatGPT, educators and policymakers should focus on providing incentives and support for the development of curricula that require the creative use of the AI technology for inquiry, hypothesis testing, and critical thinking. Furthermore, schools can foster an environment in which students openly share their experiences and challenges related to ChatGPT usage. This feedback may enable educators to refine instructional strategies for incorporating ChatGPT both inside and outside the classroom.

Societal Technology Trends Shape Students' Perceptions Around the use of ChatGPT in Schools

In this study, we found that the subjective norm extends beyond the students' immediate social groups (peers, superiors, or family members) to encompass broader societal trends. In other words, students' perceptions around using generative AI, such as comments about how *"ChatGPT and other such chatbots are here to stay,"* is influenced by their observation of how AI tools *"continue to appear"* in many aspects of society and the general

belief that ChatGPT is *"the next advancement"* in a world where *"there will always be new technologies, robots, and tools"* that students have to learn in order to *"be prepared for the future."* This broader societal influence suggests that when a technology becomes pervasive in society, the pressure to adopt it increases. In addition, the prevailing technological landscape and comparisons of ChatGPT to earlier technologies were some of the reasons students provided for integrating ChatGPT in schools. This was evident in students' comments about how AI isn't going anywhere and how students are exposed to AI outside of school. Students' perspective echoes prior studies (Choi & Chung, 2013) indicating that the adoption of technology in education often aligns with broader societal trends. Choi & Chung, (2013) revealed that within the context of social networking sites, subjective norm played a significant role in shaping users' opinions about social networking sites. In their study, users experienced societal pressure and increased norms in using social media sites. Similarly, in our study, students' emphasis on the prevalence of technology or comparison of ChatGPT with older technologies indicates students' awareness of societal expectations and norms related to technology use. Just as previous generations witnessed the acceptance and integration of calculators and internet access into educational settings, students today recognize that AI, represented by tools such as ChatGPT, is a natural progression in the evolving landscape of learning resources. Moreover, students' and educators' acknowledgment of the ubiquity of AI in their daily lives reinforces the idea that technological fluency is a 21st century skill (Jones & Hafner, 2021; Kohnke et al., 2023). As technology continues to shape various aspects of society, including education, students are likely to embrace AI tools as valuable assets in preparing for an AI-driven workplace and future. This resonates with research reports (Cardona et al., 2023) that highlight the importance of aligning educational practices with the technological realities of the contemporary world, ensuring that students are equipped with the skills and knowledge needed to thrive in an increasingly AI-infused environment.

Student Perceptions Align with Educators and Administrators Concerns around Developing Policies for ChatGPT Use

Beyond the TAM model, our findings indicate that students' views are in agreement with the concerns of educators and administrators regarding the formulation of policies for ChatGPT use. Some students who supported the integration of ChatGPT in their schools voiced the need for guidelines and policies to drive the proper integration and adoption of the AI Chatbot. This indicates that students recognize that guidelines and policies may enable proper and directed use of emerging AI technologies. In addition to proposing guidelines, students suggested that teachers should be trained on how to integrate ChatGPT in their classrooms and that teachers in turn teach students how to use the tool. Voicing this concern and proposing solutions indicates students' interest in engaging with the technology, but also their willingness to want to use the AI technology in socially appropriate ways. The implication of this finding is that students will likely support educational institutions establishing guidelines outlining the appropriate utilization of ChatGPT and similar AI tools.

In some ways, students' ethical concerns align with the findings in existing literature. Similar to educators and administrators (Cotton et al., 2023; Küchemann et al., 2023), students also expressed concerns about the potential for cheating and plagiarism, indicating a shared set of ethical concerns between students and adults, particularly in relation to plagiarism and the misuse of ChatGPT for cheating. Students' alignment with adults' concerns

suggests that a unified approach to addressing plagiarism, cheating, and responsible technology use can be adopted, involving all stakeholders. This shared concern highlights the need for a collaborative approach to address cheating and plagiarism issues, involving both students and educators in promoting a culture of academic honesty and responsibility.

TAM as Lens into Students Perceptions of ChatGPT through Qualitative Analyses

Although the Technology Acceptance Model is traditionally used quantitatively, we employed a qualitative approach similar to other students (see Huang et al., 2019; Portz et al., 2019; Zhu & Zhang, 2022). Through this qualitative approach, we coded and categorized data to identify themes related to key TAM constructs identified in the data, such as perceived usefulness and intention to use or not use ChatGPT. We also considered the external variables reflect in TAM 2 to gain deeper insights into the students' perceptions and behavioral intentions regarding ChatGPT integration. By considering these external variables qualitatively, we gained insights into how technology prevalence and precedence, experience, and ethical considerations influence students' views on integrating or banning ChatGPT in schools. Analyzing specific excerpts from student comments revealed detailed perceptions around technology acceptance, such as how students could either have first-hand experience with the technology or if they were in contact with someone who demonstrated how the technology worked to them. Although a quantitative analysis may have revealed *if* students had contact with technology, a qualitative analysis of students' comments provided *how* and *why* students had contact with the technology in a naturalistic setting of commenting on a publicly accessible article.

Hence, this qualitative approach to TAM shows that while numbers can provide generalizable trends and predictive power, narratives and open-ended responses often uncover nuanced facets of technology acceptance that might be overlooked in strictly quantitative approaches. Thus, another novel contribution of this work is the integration of the TAM framework with qualitative content analysis to analyze students' direct comments and perceptions related to generative AI. The implications for this qualitative approach to TAM applies in diverse cultural, socioeconomic, or educational contexts, providing a comprehensive perspective directly from study participants' voices.

In line with TAM 2's emphasis on perceived usefulness as a primary determinant in technology acceptance, students' views on ChatGPT's integration in their schools are shaped by their perceptions of how AI may enhance their learning experiences. When students perceive ChatGPT as a valuable tool that can aid them in various educational tasks, they are more likely to support its integration. The high school students in this study identified how ChatGPT can assist both teachers and students. Students' expression of perceived usefulness aligns with prior literature on the perspectives of other education stakeholders (Kasneci et al., 2023; Nguyen et al., 2019) regarding the usefulness of ChatGPT in academic settings for teachers and students. Kasneci et al., (2023) demonstrated how ChatGPT can support the development of critical reading, writing, and comprehension skills among students by providing feedback about students' grammars and providing students with summary and explanation of complex readings. The students in this study reported similar sentiments around the benefits of the tool for writing skills.

Conclusion

This research adds the voices and perspectives of students to the ongoing discourse surrounding the integration of ChatGPT in educational settings. One new finding that came out of our analysis of students' comments is that although existing literature primarily focuses on ethical issues like cheating and plagiarism, these students were more focused on potential issues of imbalance and unfairness for students. They perceived the use of ChatGPT as unfair, particularly when others rely on it to complete assignments. Students commented that the tool undermines the integrity of their independent efforts. This viewpoint suggests a potential divide between those who may prefer to work independently of the tools and those who, perhaps struggling academically, may find the use of the AI beneficial. Our study points to the need for future research on AI tool usage among different student performance levels, which could offer further insights into student attitudes towards AI technology adoption. Additionally, these findings imply that educators might need to develop alternative assessment methods that fairly evaluate both users and non-users of AI tools. In addition, our study reveals how students' prior experiences, both within and outside the classroom, significantly shape their perspectives and intentions towards ChatGPT. Furthermore, the study highlighted the influence of subjective norms and societal expectations on students' perceptions, mirroring broader societal technology pressures. Given the importance of involving key stakeholders in the decision-making process when contemplating technology integration in educational settings (Holmes et al., 2020), this study demonstrates that students have perspectives that align with those of educators and policymakers while also possessing unique perspectives that cater to their specific needs and experiences. Summarily, the insights gained from students' perspectives on the integration of ChatGPT in the classroom emphasize the significance of an inclusive decision-making process. Their wide-ranging viewpoints and perspectives should be given due consideration alongside the input of other stakeholders.

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