Does ChatGPT Help or Hinder Education? Exploring Its Benefits, Challenges, Student Guilt, and the Need for Educator Training

Abstract

The advent of ChatGPT in educational settings has sparked ongoing debate about whether it serves as an innovative tool or a disruptive force. This study contributes to this discourse by offering a balanced exploration of the advantages and challenges of integrating ChatGPT into education, considering both student and educator perspectives. Additionally, we analyze whether students feel guilty using it and investigate the reasons behind such guilt. From the educators' viewpoint, the study goes beyond assessing ChatGPT's pros and cons by identifying the institutional training necessary for its effective integration into teaching. Using a qualitative approach, we gathered narratives through an open-ended online survey, and inductive content analysis revealed key benefits, drawbacks, the reasons behind student guilt, and educators' training needs across secondary and higher education. These findings provide a comprehensive understanding of ChatGPT's impact on education and offer guidance for its responsible use.

Keywords: ChatGPT, education, pros and cons, student guilt, institutional training, and ethical concern

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1 Introduction

In recent years, the rapid advancement of Artificial Intelligence (AI) has profoundly transformed the educational landscape, revolutionizing how students and educators engage with learning and teaching. Among the most influential developments is the rise of generative AI (Gen AI), AI systems capable of generating original content, such as text and images, by analyzing large datasets and producing new outputs in response to prompts (Chang & Kidman, 2023). A notable example of Gen AI widely adopted in educational settings is the language model *Chat Generative Pre-trained Transformer*, better known by the public as ChatGPT (Nah et al., 2023). Developed by OpenAI and launched in 2022, ChatGPT is an AI chatbot that uses a generative language model designed to engage in human-like conversations, answer questions, generate ideas, and assist users with various tasks (Sharma & Yadav, 2022).

The integration of ChatGPT into educational practices has initiated a paradigm shift in teaching and learning. From the student perspective, ChatGPT's extensive knowledge base and rapid response time enable students to efficiently query information and receive answers promptly—often surpassing the capabilities of traditional search engines. It also supports students in brainstorming ideas for assignments and projects, solving complex problems, and improving their written work by identifying grammatical errors and suggesting revisions (Baİdoo-Anu & Ansah, 2023). Educators have similarly benefited from Gen AI's capabilities, harnessing it to access a wealth of educational resources, such as sample lesson plans and worksheets, and to develop more engaging and comprehensive lesson plans, problem sets, and lecture content (Singh & Hiran, 2022).

Nonetheless, the advantages of ChatGPT come with significant challenges. Since its release, ChatGPT has raised considerable concerns among administrators in both higher and secondary education (Plata et al., 2023). These concerns include potential drawbacks such as the risk of students becoming overly reliant on AI and the possibility of ChatGPT producing biased or inaccurate information, which students may accept without critical evaluation (Lin et al., 2023). Moreover, there are significant ethical implications associated with deploying these transformative technologies in educational contexts, alongside their recognized advantages (Mhlanga, 2023).

Given the dual-edged nature of ChatGPT's impact, the debate over whether it represents an innovation or a disruption in education is ongoing. To advance this discussion, a comprehensive exploration of both the advantages and disadvantages of ChatGPT in educational settings is essential. Additionally, researchers must understand how students feel about using ChatGPT—such as whether they experience guilt and the reasons behind it—as this is crucial for addressing the ethical implications of its integration and promoting responsible use. From the educators' perspective, researchers must evaluate not only their assessments of ChatGPT's benefits and drawbacks but also identify the institutional training necessary for its effective integration into teaching practices. This is vital for preserving key educational goals, such as fostering students' independent learning and upholding academic integrity. However, this nuanced understanding is still lacking in the existing literature.

This study seeks to address these gaps with three specific objectives: 1) to conduct a comprehensive examination of the perceived advantages and disadvantages of ChatGPT from the perspectives of both students and educators across secondary and higher education contexts, thereby facilitating a balanced understanding of its impact on teaching and learning; 2) to investigate students' emotional responses to ChatGPT, particularly focusing on whether they

experience guilt when using it and the underlying causes of such feelings, in order to gain insights into the ethical implications of AI integration in education; and 3) to identify the specific types of institutional training that educators believe are essential for effectively incorporating ChatGPT into their teaching practices while upholding educational integrity.

To accomplish these objectives, the study employed an exploratory qualitative research approach, gathering diverse narratives from both educators and students. By analyzing this qualitative data through inductive content analysis, we identified the benefits and drawbacks of ChatGPT, explored students' reasons for feeling guilty, and assessed educators' training needs across secondary and higher education levels. The findings from this analysis provide a comprehensive understanding of the complex implications of ChatGPT's use in education, which we will elaborate on in the discussion section.

2   Literature Review

Key Research Streams and Gaps in the Use of ChatGPT in Education

As AI-powered tools like ChatGPT become increasingly prevalent, completely avoiding their use is likely to be ineffective, particularly in fields such as education (Kaur et al., 2024). Instead, the focus should shift towards adopting these technologies responsibly rather than banning them. Educational institutions are now seeking guidance on how to navigate this transformative shift. To support this transition, one line of research has highlighted the drivers of integrating ChatGPT as an educational tool. For instance, one study suggested that the usefulness, credibility, and enjoyment provided by ChatGPT are significant motivators for its adoption in educational settings (Whalen & Mouza, 2023). Additionally, research has underscored the positive aspects and opportunities presented by integrating ChatGPT into education. For instance, studies have revealed that ChatGPT should be adopted as a teaching aid because it enables students to seek help and

clarification anytime, fosters creativity, provides personalized tutoring, and prepares them for future work with AI systems (Castillo et al., 2023; Yu, 2023). These findings argue against prohibiting AI technologies, advocating instead for a cautious and thoughtful adoption approach.

Another line of research has examined the concerns and ethical implications of employing ChatGPT in educational settings. One major concern is that students may assume the output from ChatGPT is always reliable and accurate, which could lead to the acceptance and propagation of incorrect information (Tyson, 2023). Additionally, studies have found concerns that students are over-relying on ChatGPT for tasks meant to develop their own critical thinking and problem-solving skills, and this overreliance can diminish the intended learning outcomes and constitute unethical behavior (Chatare, 2024; Kiryakova & Angelova, 2023). Furthermore, students who leverage ChatGPT to produce exceptional work may gain an unfair advantage over their peers lacking access to this tool (Cotton et al., 2024). These findings suggest that the inappropriate use of ChatGPT in education has the potential to undermine the development of essential student competencies and create inequities. As such, educational institutions must carefully weigh both the benefits and drawbacks before integrating ChatGPT, and implement appropriate policies and strategies to mitigate the risk of misuse.

While previous studies have explored the implications of ChatGPT in educational settings, a comprehensive analysis of its advantages and disadvantages from both student and educator perspectives across various educational levels is still lacking. Additionally, despite existing concerns regarding its drawbacks, there is limited research on whether students experience feelings of guilt. Understanding these feelings is essential for developing targeted strategies that address ethical dilemmas and assist educators in helping students use ChatGPT responsibly and guilt-free. Furthermore, although educators have expressed concerns about integrating ChatGPT, little focus

has been placed on identifying the specific institutional training they require for its ethical and effective incorporation into their teaching practices. Our study aims to address these critical gaps, providing nuanced insights into ChatGPT's role in education and offering practical recommendations for effective training for educators.

3 Method

3.1 Research Methodology and Survey Design

To address this critical gap in the literature, we implemented a qualitative research methodology by crafting open-ended survey questions to gather narrative insights on the utilization of ChatGPT. These questions were directed towards educators and students in both higher and secondary education. Opting for online surveys with open-ended questions over focus groups was intentional for two primary reasons. Firstly, online surveys allow participants the flexibility to respond at their convenience, unlike face-to-face sessions constrained by time and location (Jain, 2021). More importantly, this method encourages candid responses as participants are not influenced by the presence or opinions of others (Bowling, 2005; Jackson & Trochim, 2002). For these reasons, we selected open-ended online surveys as our qualitative research method.

The survey was structured into three sections: screening questions, main open-ended questions, and demographic questions. In the screening section, participants were asked to provide consent to participate in the survey and to indicate their prior use of ChatGPT. Those who met these criteria proceeded to the main open-ended questions. For student respondents, we asked three questions: 1) "Based on your experience with ChatGPT, what do you consider to be its advantages?", 2) "Based on your experience with ChatGPT, what do you consider to be its disadvantages?", and 3) "Have you experienced any feelings of guilt while or after using ChatGPT? If so, what was the primary cause of your guilt?" For educator respondents, we asked three

questions: 1) "Based on your experience with ChatGPT, what do you consider to be its advantages?", 2) "Based on your experience with ChatGPT, what do you consider to be its disadvantages?", and 3) "What types of training do you believe your institution should provide to educators for effectively using ChatGPT?" In the final demographic section, we collected information on participants' gender and ethnic background.

3.2   Data Collection and Analysis

After obtaining human ethics approval from the Hong Kong Polytechnic University's institutional review board (HSEARS20230825001), the online survey was distributed through a professional marketing survey company named Dynata, focusing on the United States (U.S.) and targeting four distinct groups: 1) students in secondary education, 2) educators in secondary education, 3) students in higher education, and 4) educators in higher education. This focus was based on a recent report showing that, as of January 2024, the U.S. accounted for 19.4% of ChatGPT's global traffic, the highest proportion of any country (Statista, 2024). Initially, 153 responses were collected. After screening out responses that were incomplete or irrelevant, 145 valid responses remained for analysis: 53 from secondary education students, 31 from higher education students, 30 from secondary education educators, and 31 from higher education educators. Typically, studies requiring qualitative data involve 15 to 30 informants (Marshall et al., 2013); therefore, our sample size for each group was deemed adequate.

We employed content analysis, specifically an inductive approach, to analyze the data. Inductive content analysis is an open and exploratory method that identifies recurring and emerging themes from narrative data without relying on predefined concepts or theories (Elo & Kyngäs, 2008). This approach contrasts with deductive content analysis, which categorizes content based on existing theories or concepts. Following the guidelines by Elo and Kyngäs (2008) and

Stemler (2000), six researchers [1] initially reviewed the entire set of narrative responses to familiarize themselves with the data. Four researchers were then assigned to one of four groups—secondary education students, higher education students, secondary education educators, and higher education educators—for a preliminary review of their respective responses. They carefully examined and interpreted the data to develop a codebook. Each codebook was cross-checked between researchers assigned to student groups and those assigned to educator groups. The codebook underwent multiple rounds of review and revisions until all six researchers, along with two additional moderators, reached a consensus on the predefined codes, their definitions, and accompanying examples. This thorough document provided clear instructions for accurately applying the codes. Once the codebook was established, the researchers began the coding process, strictly adhering to the set guidelines. To verify the accuracy of the coding, the two researchers who previously served as moderators thoroughly reviewed all coding results and made revisions, when necessary, in collaboration with the initial coders. This coding process continued until an intercoder reliability of 0.95 was achieved, surpassing the recommended threshold of 0.80 (Stemler, 2000).

4   Results

4.1   Descriptive Analysis Results

The descriptive analysis of our survey participants revealed the following: Among the 84 *student* participants from secondary and higher education, the gender distribution was nearly even:

[1] Six researchers, who authored this paper and utilized ChatGPT for educational purposes, were involved in the data analysis process. Given that this research focused on four distinct target groups—1) secondary education students, 2) secondary education educators, 3) higher education students, and 4) higher education educators—we assigned one researcher to analyze the narrative data from each group. To enhance the reliability of the content analysis results, two additional researchers reviewed and cross-checked the findings and provided suggestions for revisions. This collaborative process ensured the robustness and credibility of the data analysis outcomes.

57% were female, 40% male, and 3% preferred not to disclose their gender. In terms of ethnicity, 60% of the student participants identified as Caucasian, 15% as Asian or Pacific Islander, 11% as African American, and the remaining 14% as other ethnicities. For the 61 *educator* participants, the majority were female, comprising 69%, while males made up 31%. Regarding ethnicity, 79% of the educators identified as Caucasian, 10% as African American, and the remaining 11% as other ethnicities.

4.2   Content Analysis Results

4.2.1   *Student Perspective 1: The Advantages of Using ChatGPT*

Based on the inductive analysis of the 84 students' narrative responses, we identified a total of 136 pieces of content. Table 1 presents the content analysis results. Despite differing priorities, both secondary and higher education students identified the same six themes as the primary advantages of using ChatGPT: 1) efficiency (42, 30.9%), 2) knowledge enrichment (28, 20.6%), 3) guidance and clarification (23, 16.9%), 4) idea generation and brainstorming (20, 14.7%), 5) 24/7 tutoring support (8, 5.9%), and 6) others (15, 11.0%). The percentages in parentheses represent the induction rate, which indicates the proportion of each theme within the overall content analyzed (Ki & Ha-Brookshire, 2022).

Efficiency: Twenty-eight (28) pieces of content from secondary education students and fourteen (14) from higher education students highlighted *efficiency* as a significant advantage of using ChatGPT. For instance, one higher education respondent mentioned, "The advantages are that it can pull together lots of information in much less time than I could do it. It can summarize topics faster and it also gives me examples of papers to go by." Additionally, another stated, "It makes things so much easier, especially if you don't have the time to do something." Other higher education students noted that "ChatGPT offers rapid responses, aiding quick information retrieval

and conversation" and "I can get answers in one spot and using one resource, instead of several different locations and using several different resources." These responses suggest that students, both in secondary and higher education, perceive ChatGPT as a highly efficient tool for swift information retrieval, thereby enhancing productivity, particularly in time-sensitive situations.

Knowledge enrichment: Twenty-two (22) pieces of content from secondary education students and six (6) from higher education identified *knowledge enrichment* as the second most frequently mentioned advantage of using ChatGPT. For instance, a secondary education respondent noted, "It has a wealth of knowledge and information available, which is useful in many ways." Similarly, a higher education student remarked, "It is a valuable tool for addressing new and significant academic challenges. It offers a broader base for researching emerging and unexplored topics and presents information in an adaptable format that students can easily access to enhance their knowledge without replacing it." These insights suggest that students view ChatGPT as a valuable resource for broadening their general knowledge base and enhancing their understanding of new subjects.

Guidance and clarification: Both secondary education students (13 pieces of content) and higher education students (10 pieces of content) noted ChatGPT's *guidance and clarification* as another significant advantage. The following quotes exemplify this: "It can steer students in the right direction and elucidate complex ideas, helping students 'get started' in the correct path" and "ChatGPT can elucidate intricate concepts in multiple ways. Moreover, ChatGPT can be requested to explain repeatedly, enabling easy access to additional assistance whenever needed." These statements collectively demonstrate that ChatGPT guides students in navigating complex issues or concepts and clarifying difficult ideas.

Idea generation and brainstorming: *Idea generation and brainstorming* were the next most frequently mentioned advantages among secondary education students (7 pieces of content) and higher education students (13 pieces of content). One secondary school student opined that ChatGPT "is good for bouncing ideas around, brainstorming, and providing perspectives I hadn't necessarily thought about." Similarly, higher education students expressed, "If you cannot come up with anything and are drawing a blank, this will give you unlimited ideas" and that ChatGPT in this sense "helps with brainstorming and getting you thinking about a topic, provides a good baseline to expand on." These insights demonstrate that ChatGPT is highly advantageous for students to brainstorm and generate ideas when they have no clear starting point or lack a foundational framework to begin with.

24/7 tutoring support: In addition to helping students with idea generation and brainstorming, ChatGPT has been acknowledged as a *24/7 tutoring support* by both secondary education students (6 pieces of content) and higher education students (2 pieces of content). Through the content analysis, we discovered that secondary students lauded this aspect, expressing, "ChatGPT is akin to having an ever-available personal tutor. It can address queries and offer assistance round the clock. This ensures that you can access the help you need at any time, even beyond regular hours." A higher education student echoed a similar sentiment, stating, "ChatGPT feels like having a constant personal instructor. With its assistance, I can delve into all aspects of a concept at any hour of the day." These testimonials highlight that for students, ChatGPT resembles having a teacher constantly by their side, ready to provide guidance and support whenever and wherever needed.

Others: In the "others" category, various diverse advantages were identified. For instance, statements like "It's a fun way to learn" and "One primary advantage is the ability to ask questions

without feeling as if they are not the right questions to ask" were highlighted. One student even mentioned, "ChatGPT has been friendly and has given some really good advice on some situations. It seems way more compassionate and caring compared to most people I have met." Although these advantages were not as commonly mentioned, they hold significance in portraying ChatGPT as a fun, supportive, and empathetic resource.

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4.2.2 Student Perspective 2: The Disadvantages of Using ChatGPT

The 84 students' narrative responses also detailed their experiences with the disadvantages of using ChatGPT, resulting in a total of 114 pieces of content related to this topic. Table 2 provides an overview of these findings. Despite differing priorities, both secondary and higher education students identified five themes as the primary disadvantages of using ChatGPT: 1) inaccuracy and bias concerns (49, 43.0%), 2) overreliance and decreased independent thinking (27, 23.7%), 3) misuse and academic integrity concerns (23, 20.2%), 4) privacy concerns and potential misuse of personal information (2, 1.7%), and 5) others (13, 11.4%).

Inaccuracy and bias concerns: The main drawback of ChatGPT cited by students—27 pieces of content from secondary education students and 22 pieces of content from higher education students—was concerns about its *inaccuracy and bias concerns*. One secondary student pointed out, "The disadvantage of ChatGPT is its potential for bias. The information was given by the programmer so the information provided could be the opinion of the creator. I have found that a lot of the questions asked can be of a certain opinion rather than based on facts." Similarly, several higher education students echoed these concerns, stating that "ChatGPT's limitations lie in its occasional inability to grasp context or provide real-time, up-to-date information, leading to inaccuracies. It may also generate inappropriate or biased content due to the data it was trained on"

and "It sometimes presents false information very confidently, which could be misleading to a person who does not double-check information for accuracy." Collectively, these accounts highlight students' concerns about the inaccurate and biased information provided by ChatGPT, emphasizing the need for careful verification of its answers in sensitive or critical discussions.

Overreliance and decreased independent thinking: Another disadvantage of using ChatGPT was noted among students, as emerged from 18 pieces of content from secondary education students and 9 from higher education students. Exemplary quotes from secondary school students show, "It doesn't let us use our own brain or thoughts. I can see how it could cause people to be lazy and not think as much on their own" and "Some of the disadvantages of using this service can be the thought of relying on it too much. We might not speak for ourselves anymore and that could be a big problem for us in the future if it continues to get out of hand." Additionally, one higher education student echoed this sentiment, saying, "Students might show up unprepared for the discussion and end up having to sit through an unengaging section." These accounts indicate that another drawback of employing ChatGPT within educational settings could be the risk of *over-reliance* on the tool, leading to *decreased independent thinking*.

Misuse and academic integrity concerns: The analysis indicated that 17 pieces of content from secondary education students and 6 pieces from higher education students highlighted an additional drawback of ChatGPT's usage: the concern that peers might *misuse the tool for unethical or illicit activities*. One secondary student remarked, "It can be used for bad purposes in schools, such as cheating on exams, writing essays, and answering questions. It can be tricky." Similarly, a student in higher education observed, "It is so easy to cheat with it. Also, AI responses are harder to detect through plagiarism checkers and other resources." These narratives indicate that students have significant concerns about ChatGPT's misuse and the integrity-related concerns

it raises, highlighting the urgent need for educational institutions to implement effective measures to address these challenges.

Privacy concerns and potential misuse of personal information: Despite very few responses—one from a secondary education student and another from a higher education student—another important disadvantage of using ChatGPT that students shared was *privacy concerns and the potential misuse of personal information*. For instance, one secondary school student highlighted, "You never know what could happen if you give it personal information." Similarly, a higher education student expressed, "I am also very concerned about my privacy and the information that ChatGPT has." These limited yet notable insights underscore students' apprehensions regarding data privacy and security in the use of ChatGPT.

Others: In the "others" category, additional drawbacks reveal concerns related to interpersonal aspects. The first quote addresses the lack of human touch and personal interaction, noting, "ChatGPT lacks the human touch and personal interaction that can be important in certain situations, especially when dealing with complex or sensitive issues. Some users may prefer speaking to a real person rather than interacting with a machine." Another comment raises worries about the AI's learning process, stating, "I am assuming it learns from its interactions, so I can see why that could be bad. Seeing how AIs in the past had to be shut down from people giving it bad information, making them racist and overall unpleasant to talk to." Together, these insights suggest that there are significant social and technological considerations that educational institutions must address when integrating ChatGPT into student learning environments.

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4.2.3   Student Perspective 3: Primary Reasons Behind Guilt in Utilizing ChatGPT

To gain a deeper understanding of how students use ChatGPT, we examined not only their assessments of the tool's advantages and disadvantages but also their emotional responses, particularly feelings of guilt. Our survey revealed that 22 out of 84 students experienced such guilt. Through inductive analysis of the qualitative data from those who reported feelings of guilt (n=22), we identified 29 contents detailing the reasons behind these emotions. As summarized in Table 3, the analysis uncovered three primary reasons: 1) guilt arising from perceptions of unoriginal work (12, 41.4%), 2) guilt from perceptions of cheating and unfair advantage (9, 31.0%), and 3) others (8, 27.6%).

Guilt arising from perceptions of unoriginal work: A total of 12 pieces of content revealed that secondary education students (4 content) and higher education students (8 content) expressed feelings of guilt related to their use of ChatGPT, stemming from *concerns about the originality of their work*. For example, one secondary education student admitted, "Just using it in general for brainstorming ideas makes me feel guilty about not coming up with these things on my own." Similarly, higher education students echoed this sentiment, stating, "The main cause of my guilt stems from the potential for academic dishonesty. I worry occasionally that using ChatGPT even as just a support could be considered plagiarism or unethical. I want to do my work on my own without cheating" and "It was just for a homework assignment and I didn't copy and paste, but it still felt wrong using someone else's idea." These quotes relate to the theme of 'overreliance and decreased independent thinking,' which emerged as a disadvantage of using ChatGPT. They underscore that the primary source of their guilt arises from not generating ideas independently and relying on external sources like ChatGPT for inspiration, raising concerns about the authenticity and originality of their academic work.

<u>Guilt from perceptions of cheating and unfair advantage:</u> The guilt associated with *feeling as if one is cheating or being unfairly advantaged* was another reason students cited for their feelings of guilt. While the first theme was more indirect, this theme is more explicit and pronounced with three contents from secondary education students and six contents from higher education students explicitly admitting that they feel guilty because it gives the impression of cheating. The exemplary quotes provided shed light on this sentiment: "It's like cheating and would be unfair to someone who is writing their own paper. They would be spending a lot of time to finish the project while I would be spending very little time" and "Because I feel like I'm cheating, so it feels like I don't put enough work in to earn the grade and the work credit for it. Ultimately, it feels like someone else is doing the work for me." These statements suggest that students' guilt is predominantly driven by ethical considerations, as they perceive an unfair advantage over peers who do not use such tools, leading to a sense of cheating. In this context, the theme aligns with the theme of 'misuse and academic integrity concerns,' which emerged as the third most mentioned disadvantage of using ChatGPT.

<u>Others</u>: In the "others" category, personal and reflective confessions were revealed among the students, such as "I was very concerned that my parents would be disappointed in me" and "I feel like I am not going to get the full impact of doing the assignment that the professor has given me." While only a few of 22 out of 84 students disclosed such feelings of guilt, it is noteworthy that some are reflecting on the broader implications of using ChatGPT, including personal and educational consequences. This suggests that educators have a crucial role in guiding students on the appropriate use of this technology and understanding its ethical boundaries, thereby alleviating unnecessary feelings of guilt. The educators' perspectives on the use of ChatGPT are detailed in the following sections.

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4.2.4   Educator Perspective 1: The Advantages of Using ChatGPT

The content analysis results related to educators' perspectives revealed 95 pieces of content from the narrative responses of 61 educators, highlighting various advantages of ChatGPT in the educational landscape. As detailed in Table 4, five key themes emerged: 1) reducing workload and freeing time (23, 24.2%), 2) personalized learning and tailored feedback and support (22, 23.2%), 3) enhancing idea generation and educational content development (17, 17.9%), 4) enhancing educational accessibility and flexibility for student-centered learning (15, 15.8%), 5) and others (18, 18.9%).

Reducing workload and freeing time: The first most frequently mentioned advantage, noted by 12 pieces of content from secondary education educators and 11 from higher education educators, was the potential for AI to *reduce teachers' workload* by automating routine tasks. For example, secondary school educators noted, "Freeing teachers up to do more people-oriented work" and "I believe AI will simplify long teacher tasks like lesson planning and long tasks for students as well, like writing." Similarly, higher education educators commented, "It also frees up more of the teachers' time, allowing more time to be spent on research" and "It helps teachers deal with routine problems and provide explanations, helping to reduce teachers' workload." These quotes illustrate that a significant advantage of incorporating ChatGPT, from the educators' perspective, is its capacity to automate tasks and minimize the time spent on routine work, thereby enabling educators to concentrate on more meaningful activities.

Personalized learning and tailored feedback and support: The second most frequently mentioned advantage of using ChatGPT in education—cited in 11 pieces of content from secondary education and 11 from higher education—was its ability to provide *personalized*

learning and adaptive support for students. This is well reflected in the quotes from two secondary educators: "I believe that AI and ChatGPT will be beneficial in education by allowing students to learn in ways that are most appropriate for their own style of comprehension" and "Providing personalized tutoring and homework assistance. Assessing student understanding and providing feedback." Similarly, another educator in higher education echoed this sentiment, stating, "These AI chat technologies understand the learning styles of the students and provide a personalized learning experience. They analyze the student's academic performance and build courses to meet their requirements." These remarks suggest that, from the educators' perspective, while educational institutions strive to offer individualized support, the limitations inherent in conventional standardized education methods can be effectively addressed through the use of ChatGPT. By facilitating customized learning experiences, tailored feedback, and individualized support, educators believe that this technology enhances the overall educational journey for students.

Enhancing idea generation and educational content development: Another advantage underscored by educators—cited in 7 pieces of content from secondary education and 10 from higher education—was ChatGPT's dual role in *fostering idea generation and bolstering the development of educational content*. This includes lesson planning, test creation, and exercise development, benefiting both teachers and students alike. Testimonials from secondary school teachers emphasized ChatGPT's capacity to nurture students' creative processes, with one teacher noting that ChatGPT "helps students brainstorm by providing them with ideas to think about and elaborate on." Another teacher described ChatGPT as instrumental for lesson planning and test creation, stating, "I often begin my lesson planning there and refine it on my own. It helps spark creativity that I sometimes struggle to generate independently." In higher education, educators

echoed these sentiments, recognizing it as a valuable tool "for students to gain insights through algorithms and gather ideas for research" and "I believe there's promise in using this technology to generate exercises for students to practice various communication strategies. For example, it can create grammar exercises or generate starting points or outlines for students to build upon." These insights demonstrate that educators view ChatGPT as a crucial resource for stimulating idea generation and enhancing the development of educational content. By encouraging inquiry, facilitating brainstorming, and providing a framework for lesson planning, ChatGPT is recognized as a powerful tool for advancing educational practices.

Enhancing educational accessibility and flexibility for student-centered learning: Another advantage educators highlighted in their use of ChatGPT was its value for students. Both secondary education teachers (cited in 8 pieces of content) and higher education educators (7 pieces of content) recognized it as an invaluable tool for providing students with academic knowledge anytime and anywhere. For example, one secondary education teacher emphasized its versatility, stating, "It would be available any time almost anywhere and can be used for multiple concepts and subjects." Similarly, higher education faculty praised ChatGPT for its accessibility beyond traditional classroom hours, with one noting, "It can be accessed at any time, allowing students to seek help outside of traditional classroom hours, and this flexibility allows students to learn on their own terms, increasing accessibility to education." These insights demonstrate that educators see ChatGPT as a key tool for *expanding educational accessibility and flexibility*, ultimately supporting students in learning at their own pace and according to their individual needs.

Others: In addition to the above, there were a few other interesting responses from educators in the "others" category. For example, some educators noted that "using ChatGPT gives them thrill

or excitement because they'll learn new things" and expressed the belief that it "would help keep students engaged and help with retention."

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4.2.5   Educator Perspective 2: The Disadvantages of Using ChatGPT

Educators were also asked to share their thoughts on the downsides of deploying ChatGPT in educational settings. Analysis of their responses revealed five themes, many of which closely aligned with students' concerns about using ChatGPT: 1) overreliance and decreased independent thinking (36, 37.5%), 2) misuse and academic integrity concerns (24, 25.0%), 3) inaccuracy and bias concerns (13, 13.5%), 4) undermining the human touch (4, 4.2%), and 5) others (19, 19.8%).

Overreliance and decreased independent thinking: One of the main disadvantages highlighted by educators—16 content from secondary education and 20 from higher education—is the concern that students may become *overly dependent* on the tool, leading to a *decline in independent thinking*. This concern also echoes those raised by students. While acknowledging the advantages of ChatGPT, a secondary school teacher raised this issue, expressing her worry that "students can grow too dependent on technology, and not use their own words and their own thoughts." Another teacher in secondary education remarked, "Many students may develop a heavy reliance on it, potentially leading to addiction and reduced seriousness in reading and staying engaged." This concern was also echoed by higher education faculty members. One faculty member stated, "They can become reliant on it and not develop a proper voice." Another mentioned, "Some students may rely too heavily on ChatGPT. This can ultimately influence the rest of their studies and create a lazier student…. Instructors may also become lazy and rely too much on ChatGPT to create their lesson plans and respond to their students." Both secondary and higher education teachers worry that excessive reliance on ChatGPT may weaken students' ability

to develop their own voices and critical thinking skills. These concerns suggest that without proper guidance, the use of ChatGPT could hinder the development of essential skills vital for academic and personal growth.

Misuse and academic integrity concerns: Another critical disadvantage of using ChatGPT, as highlighted by educators—cited in 13 pieces of content from secondary education and 11 from higher education—and shared concerns among students, is its potential for *misuse and the associated academic integrity* issues. A secondary school teacher expressed concerns regarding academic integrity, stating that "ChatGPT could be used to generate plagiarized essays or cheat on exams, undermining the integrity of the learning process." Another secondary school teacher echoed a similar sentiment, pointing out that students might use ChatGPT "to cheat on tests and quizzes and even commit plagiarism." Higher education educators also raised issues related to plagiarism, citing, references, and potential copyright infringement. These concerns underscore the serious threat ChatGPT poses to academic integrity, highlighting the urgent need for government education authorities and academic leaders to intervene by developing and enforcing strategies that prevent its misuse and uphold academic standards.

Inaccuracy and bias concerns: The *inaccuracy and bias concern*—highlighted in seven pieces of content from secondary education and six from higher education—was also previously shared by students. A secondary school educator expressed worry that "the current information provided is frequently not accurate and reliable. Students trust this information and then cite inaccurate sources in their research papers." Similarly, a higher education professional noted that "artificial intelligence programs provide information that seems reasonable and well-written but may lack insight and accuracy. It can be difficult to pinpoint which parts are incorrect, which can be detrimental to a student's learning experience and decision-making ability." These narratives

underscore the serious impact of ChatGPT's inaccuracies and biases on students' learning and academic performance, potentially undermining their comprehension and distorting their knowledge.

Underscore the human touch: Less commonly discussed, yet equally significant, is a concern highlighted in four pieces of content from higher education educators. This issue centers on ChatGPT's *lack of human interaction* and emotional connection capabilities. One higher education professional articulated, "ChatGPT is a virtual language model that lacks human emotional and interpersonal interaction capabilities. This means that it fails to provide emotional support, encouragement and motivation, and is unable to understand the emotional state and individual needs of its students. In some educational scenarios, human interaction and emotional connection are very important, and ChatGPT does not fully meet this need." This emphasizes that, despite its advanced capabilities, ChatGPT fails to address the human-centered aspects of education, compromising the relationships between educators and students, as well as the care and responsibility that educators have towards their students. These elements are crucial for offering the necessary support and guidance that students rightfully deserve, establishing an environment that not only imparts knowledge but also nurtures social skills and personal growth.

Others: In addition to the four key disadvantages mentioned above, some educators raised concerns about the inequities associated with access to ChatGPT. As one participant noted, "It can also be a disadvantage to people who don't have the resources to afford them" while another remarked, "Not everyone has access to ChatGPT." Furthermore, the quote, "There may be some students who will not respond well to new technology, and that can pose problems for those students as well as for teachers" highlights another potential disadvantage. This suggests that some students may struggle with adapting to new educational technologies like ChatGPT, which could

not only fail to deliver the anticipated benefits but also require additional effort from both students and teachers to bridge the gap.

== Place Table 5 About Here ==

4.2.6   *Educator Perspective 3: Recommended Training for Institutions to Effectively Utilize ChatGPT*

After thoroughly analyzing the advantages and disadvantages of implementing ChatGPT from educators' perspectives, the final step was to gather their views on the types of training their institutions should provide for effective use of ChatGPT. Responses from 61 educators produced 63 pieces of content addressing this question. Analysis of these responses revealed the following themes: 1) training on the advantages and disadvantages of implementing ChatGPT in an educational context (28, 43.1%), 2) training on the responsible and ethical utilization of ChatGPT (16, 24.6%), 3) training on identifying misuse and implementing effective responses (10, 15.4%), 4) training on the impact of ChatGPT in education (3, 4.6%), and 5) others (8, 12.3%).

Training on the advantages and disadvantages of implementing ChatGPT in an educational context: A significant amount of content from both secondary education (n=17) and higher education (n=11) indicates that institutions should provide educators with *comprehensive training to understand both the benefits and drawbacks* of incorporating ChatGPT into education and its potential impact. One secondary school teacher emphasized, "Educators should gain a basic understanding of how AI works and how ChatGPT specifically operates. This includes understanding the technology's capabilities and limitations, its potential impact on education, and the ethical considerations involved. Educators should also learn how to effectively integrate ChatGPT into their teaching strategies, including identifying appropriate use cases, designing lessons and activities that incorporate ChatGPT, and assessing its effectiveness in enhancing

learning outcomes." The teacher highlighted that beyond knowing the pros and cons, educators should be trained on how to integrate ChatGPT effectively into pedagogy with specific case examples. A higher education educator similarly noted, "For many educators who are not tech-savvy, structured training on ChatGPT is essential to become familiar with the technology, understand the information accessible to students, and how it can be utilized to their advantage and disadvantage in the classroom." These narratives suggest that educational leaders should develop effective training programs to ensure that educators are familiar with ChatGPT and equipped to integrate it properly into their teaching practices.

Training on the responsible and ethical utilization of ChatGPT: In addition, educators, with nine pieces of content from secondary education educators and seven from higher education educators, have emphasized the necessity for institutional-level training on *how to use it responsibly and ethically* for both students and teachers. Noteworthy quotes include: "Educational institutions have the obligation as AI becomes more mainstream to ensure that their staff and faculty are properly trained on the technical uses as well as the practical ones, specifically how the principles are applied by both teachers and students to ensure that ethical considerations are applied" and "Institutions should instruct educators about best practices in terms of using artificial intelligence responsibly. They also need to be aware of the possibility of negative consequences such as cheating or plagiarism." This kind of training appears to be crucial as both students and educators highlighted 'misuse and academic integrity concerns' as one of the critical disadvantages of using ChatGPT.

Training on identifying misuse and implementing effective responses: Given the serious issue of ChatGPT misuse among students and its implications for academic integrity, educators have also highlighted the need for training on *how to manage this issue effectively*. For instance,

among the seven pieces of content from secondary education teachers' responses, one noted, "I believe we should be given training on how to identify when students are using ChatGPT. Additionally, we should have training or discussions on appropriate penalties for inappropriate use of ChatGPT." Similarly, higher education faculty suggested, "Training should include ways to identify AI-generated content and instructions on using technology to detect AI-generated answers. It should also cover what to do when students submit AI-generated assignments." This highlights that, while educators understand they cannot completely prevent students from using ChatGPT, they require targeted training to effectively detect misuse, manage AI-generated content, and apply appropriate measures, such as penalties, to uphold academic standards.

Training on the impact of ChatGPT in education: Additionally, although limited, content from secondary education educators' responses (*n*=2) and higher education educators' responses (*n*=1) highlighted the need for institutions to provide training on *how ChatGPT can enhance teaching* and improve student learning outcomes. These educators expressed a desire for guidance on understanding "how ChatGPT will improve or help our teaching for students to learn more" and insight into "the overall educational changes to unfold." This suggests that educators are seeking structured training on how to effectively leverage ChatGPT to maximize its positive impact on education, ensuring that its integration aligns with pedagogical goals and the envisioned transformative changes it can bring to education.

Others: In addition to the above, some interesting comments emerged, such as: "I do not think that educators should be the ones responsible for monitoring and learning about this tool; it should be the job of students' legal guardians to oversee their work at home."

== Place Table 6 About Here ==

5   Discussion

Our study makes several significant contributions to the education literature and offers valuable insights for education policymakers, institutional leaders, and educators alike.

Firstly, our findings illuminated the advantages of integrating ChatGPT in education from both students' and educators' perspectives across secondary and higher education, offering a comparative analysis. Students notably cited efficiency, knowledge enrichment, and guidance and clarification as the top benefits. Meanwhile, educators emphasized different advantages, such as reducing workload and freeing up time, personalized learning with tailored feedback, and enhanced idea generation and educational content development. These findings demonstrate the effective applications of ChatGPT for both learning and teaching.

Secondly, despite the varied advantages, both students and educators across educational levels expressed common concerns about the disadvantages: inaccuracy and bias, overreliance leading to diminished independent thinking, and issues related to misuse and academic integrity. These concerns highlight the need for education policymakers, institutional leaders, and educators to exercise caution in ensuring the responsible use of ChatGPT. While ChatGPT offers significant benefits, excessive reliance on this tool by both teachers and students may yield unreliable results and impede the development of critical thinking and independence, fundamental aspects of education. Moreover, stakeholders must remain vigilant regarding the profound ethical implications linked to ChatGPT, encompassing concerns such as misuse, academic integrity breaches, plagiarism, improper citation practices, and copyright violations.

Thirdly, beyond identifying the pros and cons, the study delved into why students may feel guilty about using ChatGPT. This guilt manifested in two forms: guilt arising from perceptions of unoriginal work and guilt from perceptions of cheating and gaining an unfair advantage. These feelings were closely tied to the previously mentioned drawbacks—overreliance and ethical

guiltiness. This aspect of our findings emphasizes that while ChatGPT offers significant benefits, it also presents risks if not used thoughtfully and responsibly, highlighting the need for careful integration to balance its advantages with the ethical and educational challenges it poses.

Lastly, our study identified the specific types of training that educators believe are important for institutions to provide. Recognizing that completely preventing students from using ChatGPT is unrealistic, educators recommended four specialized training sessions: (1) Training on the advantages and disadvantages of implementing ChatGPT in an educational context, (2) Training on the responsible and ethical utilization of ChatGPT, (3) Training on identifying misuse and implementing effective responses, and (4) Training on the impact of ChatGPT in education. Referring to these findings, education policymakers and secondary and higher education institutions should consider offering structured training to their educators and administrators to ensure ChatGPT's integration aligns with pedagogical goals and maximizes its positive impact on education.

While our study makes significant contributions to the existing literature, it is important to acknowledge its limitations, which also present opportunities for future research. A key limitation is the reliance on qualitative data from a relatively small sample size, which may limit the generalizability of our findings. Future research could address this by conducting quantitative studies with larger, more diverse samples to empirically validate the core themes identified in our study—ranging from the advantages and challenges of ChatGPT to student guilt and the need for educator training. Such an approach would provide a deeper understanding of how ChatGPT influences educational settings and help develop effective strategies for its integration.

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Table 1

Content Analysis Results: Student Perspectives on the Advantages of Using ChatGPT

Themes (Frequency, Induction rate)	Secondary education [S] (*n*=53)	Higher education [H] (*n*=31)	Examples of participants' quotes	
Efficiency (42, 30.9%)	28 (32.3%)	14 (28.6%)	[S] Informant 36:	"The advantages are that it can pull together lots of information in much less time than I could do it. It can summarize topics faster and also give me examples of papers to go by. "
			[S] Informant 44:	"It makes things so much easier especially if you don't have the time to do something."
			[H] Informant 79:	"ChatGPT offers rapid responses, aiding quick information retrieval and conversation."
			[H] Informant 84:	"I also spend a lot less of precious time researching for answers. I can get answers in one spot and using one resource, instead of several different locations and using several different resources."
Knowledge enrichment (28, 20.6%)	22 (25.3%)	6 (12.2%)	[S] Informant 7:	"Improve my general knowledge base."
			[S] Informant 45:	"It has a wealth of knowledge and info available which is useful in many ways."
			[H] Informant 72:	"It is a good product when it comes to facing new and important challenges in the academic setting. It gives a wider base for researching new and newly explored topics while putting the information in an adjustable format where students can easily access it to enhance their knowledge rather than in substitution of their knowledge."
Guidance and clarification (23, 16.9%)	13 (14.9%)	10 (20.4%)	[S] Informant 12:	"It can point students in the right direction and clarify complex ideas and get students "started" in the right direction."
			[S] Informant 37:	"ChatGPT can explain complex things in various ways. Additionally, ChatGPT can be asked to explain again and again many times, so if one needs more help with something, ChatGPT can easily provide it."
			[H] Informant 57:	"It gives a detailed step by step procedure for math problems. Such as my chemistry homework if I do not understand ChatGPT shows me exactly how to solve the problem."
Idea generation and brainstorming	7 (8.0%)	13 (26.5%)	[S] Informant 53:	"It's good for bouncing ideas around, brainstorming and providing perspectives I hadn't necessarily thought about."

(20, 14.7%)			[H] Informant 62:	"If you cannot come up with anything and are drawing a blank, this will give you unlimited ideas."
			[H] Informant 69:	"Helps with brainstorming and getting you thinking about a topic, provides a good baseline to expand on."
24/7 tutoring support (8, 5.9%)	6 (6.9%)	2 (4.1%)	[S] Informant 9:	"It's like having a tutor. It feels like having your teacher right beside you no matter where you are."
			[S] Informant 42:	"ChatGPT is like having a personal tutor who never sleeps. It can handle questions and provide help anytime, day or night. This means you can get the support you need whenever you need it, even outside of regular hours."
			[H] Informant 61:	"ChatGPT feels like having a personal teacher who's always available. With its help, I can learn all aspects of a concept at any time of the day."
Others (15, 11.0%)	11 (12.6%)	4 (8.2%)	[S] Informant 32:	"It's a fun way to learn."
			[H] Informant 61:	"One primary advantage is the ability to ask questions without feeling as if they are not the right questions to ask."
			[H] Informant 70:	"ChatGPT has been friendly and has given some really good advice on some situations. It seems way more compassionate and caring compared to most people I have met."
TOTAL (136, 100%)	87 (100%)	49 (100%)		

Table 2

Content Analysis Results: Student Perspectives on the Disadvantages of Using ChatGPT

Themes (Frequency, Induction rate)	Secondary education [S] (*n*=53)	Higher education [H] (*n*=31)	Examples of participants' quotes	
Inaccuracy and bias concerns (49, 43.0%)	27 (37.0%)	22 (53.7%)	[S] Informant 20:	"The disadvantage of ChatGPT is its potential for bias. The information was given by the programmer, so the information provided could be the opinion of the creator. I have found that a lot of the questions asked can be of a certain opinion rather than based on facts."
			[S] Informant 22:	"Sometimes you get inaccurate results because it does not understand how the real world works. Or it merges fiction and non-fiction. So, you can't really rely on ChatGPT 100 percent right off the bat. You have to read it and redirect it."
			[H] Informant 67:	"ChatGPT's limitations lie in its occasional inability to grasp context or provide real-time, up-to-date information, leading to inaccuracies. It may also generate inappropriate or biased content due to the data it was trained on, highlighting the need for careful monitoring and guidance in sensitive or critical discussions."
			[H] Informant 82:	"It sometimes presents false information very confidently, which could be misleading to a person who does not double-check information for accuracy."
Overreliance and decreased independent thinking (27, 23.7%)	18 (24.7%)	9 (22.0%)	[S] Informant 26:	"It doesn't let us use our own brain or thoughts. I can see how it could cause people to be lazy and not think as much on their own."
			[S] Informant 33:	"Some of the disadvantages of using this service can be the thought of relying on it too much. We might not speak for ourselves anymore, and that could be a big problem for us in the future if it continues to get out of hand."
			[H] Informant 54:	"Students might show up unprepared for the discussion and end up having to sit through an unengaging section."
Misuse and academic integrity concerns (23, 20.2%)	17 (23.3%)	6 (14.6%)	[S] Informant 28:	"People taking advantage of it to do things that aren't allowed in school or just in general, like using it for illegal things like hacking computers."
			[S] Informant 16:	"It can be used for bad purposes in schools, such as cheating on exams, writing essays, answering questions, and can be tricky."
			[H] Informant 76:	"It is so easy to cheat with it. Also, AI responses are harder detected through plagiarism checkers and other recourses such as that."
			[S] Informant 10:	"You never know what could happen if you give it personal information."

Privacy concerns and potential misuse of personal information (2, 1.7%)	1 (1.3%)	1 (2.4%)	[H] Informant 63:	"I am also very concerned about my privacy and the information that ChatGPT has."
Others (13, 11.4%)	10 (13.7%)	3 (7.3%)	[S] Informant 42:	"Lack of human touch: ChatGPT lacks the human touch and personal interaction that can be important in certain situations, especially when dealing with complex or sensitive issues. Some users may prefer speaking to a real person rather than interacting with a machine."
			[H] Informant 70:	"I am assuming it learns from its interactions, so I can see why that could be bad. Seeing how AIs in the past had to be shut down from people giving it bad information, making them racist and over all unpleasant to talk to."
TOTAL (114, 100%)	73 (100%)	41 (100%)		

Table 3

Content Analysis Results: Student Perspectives on the Primary Reasons for Guilt in Using ChatGPT

Themes (Frequency, Induction rate)	Secondary education [S] (*n*=8)	Higher education [H] (*n*=14)	Examples of participants' quotes	
The guilt arising from perceptions of unoriginal work (12, 41.4%)	4 (40.0%)	8 (42.1%)	[S] Informant 26:	"Just using it in general for brainstorming ideas makes me feel guilty about not coming up with these things on my own."
			[H] Informant 69:	"It was just for a homework assignment, and I didn't copy and paste, but it still felt wrong using someone else's idea."
			[H] Informant 77:	"The main cause of my guilt stems from the potential for academic dishonesty. I worry occasionally that using ChatGPT even as just a support could be considered plagiarism or unethical. I want to do my work on my own without cheating."
The guilt from perceptions of cheating and unfair advantage (9, 31.0%)	3 (30.0%)	6 (31.6%)	[S] Informant 38:	"It's like cheating and would be unfair to someone who is writing their own paper. They would be spending a lot of time to finish the project while I would be spending very little time."
			[H] Informant 59:	"I'm not spending enough time on the research, and it might match someone else's papers so perfectly that I would get caught."
			[H] Informant 79:	"Because I feel like I'm cheating, so it feels like I don't put enough work in to earn the grade and the work credit for it. Ultimately it feels like someone else is doing the work for me."
Others (8, 27.6%)	3 (30.0%)	5 (26.3%)	[S] Informant 12:	"I was very concerned that my parents would be disappointed in me."
			[H] Informant 81:	"I feel like I am not going to get the full impact of doing the assignment that the professor has given me."
TOTAL (29, 100%)	10 (100%)	19 (100%)		

Table 4

Content Analysis Results: Educator Perspectives on the Advantages of Using ChatGPT

Themes (Frequency, Induction rate)	Secondary education [S] (*n*=8)	Higher education [H] (*n*=14)	Examples of participants' quotes	
Reducing workload and freeing time (23, 24.2%)	12 (27.3%)	11 (21.6%)	[S] Informant 2:	"I believe AI will simplify long teacher tasks like lesson planning and long tasks for students as well, like writing."
			[S] Informant 29:	"Freeing teachers up to do more people-oriented work."
			[H] Informant 45:	"It also frees up more of the teachers' time, and more time can be spent on research."
			[H] Informant 46:	"It helps teachers to deal with routine problems and provide explanations, helping to reduce teachers' workload."
Personalized learning and tailored feedback and support (22, 23.2%)	11 (25.0%)	11 (21.6%)	[S] Informant 8:	"I believe that AI and ChatGPT will be beneficial in education by allowing students better ability to learn in ways that are most appropriate for their own style of comprehension."
			[S] Informant 23:	"Providing personalized tutoring and homework assistance. Assessing student understanding and providing feedback. Helping students develop their writing and communication skills."
			[H] Informant 47:	"These AI chat technologies understand the learning styles of the students and provide a personalized learning experience. It analyzes the student's academic performance and builds courses to meet their requirements. Through these programs, students can learn at a comfortable pace and understand complex concepts thoroughly."
			[H] Informant 36:	"ChatGPT has great advantages because it will assist students with their learning and critical thinking skills by enhancing their learning preferences. Some students are hands-on learners, while others require both visual and abstract learning methods."
Enhancing idea generation and educational content development (17, 17.9%)	7 (15.9%)	10 (19.6%)	[S] Informant 11:	"It will help students to brainstorm by giving them ideas to think about and elaborate on. I think it is a great critical thinking tool."
			[S] Informant 27:	"I often begin my lesson planning there and refine it on my own. It helps spark creativity that I sometimes struggle to generate independently."
			[H] Informant 39:	"It is a good way for students to gain insights through algorithms and gather ideas for research."

			[H] Informant 31:	"I believe there's promise in using this technology to generate exercises for students to practice various communication strategies. For example, it can create grammar exercises or generate starting points or outlines for students to build upon."
Enhancing educational accessibility and flexibility for student-centered learning (15, 15.8%)	8 (18.2%)	7 (13.7%)	[S] Informant 13:	"They can easily access needed data for assignments."
			[H] Informant 42:	"It can be accessed at any time, allowing students to seek help outside of traditional classroom hours, and this flexibility allows students to learn on their own terms, increasing accessibility to education."
			[H] Informant 59:	"It would be available any time, almost anywhere, and can be used for multiple concepts and subjects."
Others (18, 18.9%)	6 (13.6%)	12 (23.5%)	[S] Informant 22:	"Using ChatGPT gives them thrills or excitement because they'll learn new things."
			[H] Informant 55:	"I believe this would help keep students engaged and help with retention."
TOTAL (95, 100%)	44 (100%)	51 (100%)		

Table 5

Content Analysis Results: Educator Perspectives on the Disadvantages of Using ChatGPT

Themes (Frequency, Induction rate)	Secondary education [S] (*n*=8)	Higher education [H] (*n*=14)	Examples of participants' quotes	
Overreliance and decreased independent thinking (36, 37.5%)	16 (37.2%)	20 (37.8%)	[S] Informant 4:	"Students can grow too dependent on technology, and not use their own words and their own thoughts."
			[S] Informant 18:	"Many students may develop a heavy reliance on it, potentially leading to addiction and reduced seriousness in reading and staying engaged."
			[H] Informant 32:	"They can become reliant on it and not develop a proper voice. Writing can turn boring or stale."
			[H] Informant 39:	"Some students may rely too heavily on ChatGPT. This can ultimately influence the rest of their studies and create a lazier student. It is a great way to brainstorm, just not to copy. Instructors may also become lazy and rely too much on ChatGPT to create their lesson plans and respond to their students."
Misuse and academic integrity concerns (24, 25.0%)	13 (30.2%)	11 (20.8%)	[S] Informant 23:	"ChatGPT could be used to generate plagiarized essays or cheat on exams, undermining the integrity of the learning process."
			[S] Informant 26:	"I can see students potentially using this program to cheat on tests and quizzes and even commit plagiarism."
			[H] Informant 59:	"There are also issues with plagiarism, citing, references, and possible copyright infringement."
			[H] Informant 41:	"It can also lead to rampant plagiarism among students."
Inaccuracy and bias concerns (13, 13.5%)	7 (16.3%)	6 (11.3%)	[S] Informant 15:	"The current information provided is frequently not accurate and reliable. Students trust that this is valid information and then provide inaccurately cited resources on research papers."
			[S] Informant 17:	"Another disadvantage is biased responses, which can have a negative impact on students."
			[H] Informant 46:	"The data may be biased or misinformed and may produce inaccurate and misleading responses."
			[H] Informant 47:	"Artificial Intelligence programs provide information that seems reasonable and well-written but lacks insight, and the information is not always accurate. But it can be difficult to detect exactly which parts of the information are inaccurate. This can be detrimental to a student's learning experience and decision-making ability."

Undermining teacher-student relationship (4, 4.2%)	0 (0.0%)	4 (7.5%)	[H] Informant 43:	"It can also lead to less interaction between students and teachers, preventing a strong teacher-student relationship."
			[H] Informant 61:	"ChatGPT is a virtual language model that lacks human emotional and interpersonal interaction capabilities. This means that it fails to provide emotional support, encouragement and motivation, and is unable to understand the emotional state and individual needs of its students. In some educational scenarios, human interaction and emotional connection are very important, and ChatGPT does not fully meet this need."
Others (19, 19.8%)	7 (16.3%)	12 (22.6%)	[S] Informant 18:	"It can also be a disadvantage to people that don't have the resources to afford them."
			[H] Informant 32:	"Not everyone has access to ChatGPT."
			[H] Informant 35:	"There may be some students that will not respond well to new technology, and that can pose problems for those students as well as for teachers."
TOTAL (96, 100%)	43 (100%)	53 (100%)		

Table 6

Content Analysis Results: Educator Perspectives on the Recommended Training for Using ChatGPT

Themes (Frequency, Induction rate)	Secondary education [S] (*n*=8)	Higher education [H] (*n*=14)	Examples of participants' quotes	
Training on the advantages and disadvantages of implementing ChatGPT in an educational context (28, 43.1%)	17 (43.6%)	11 (42.4%)	[S] Informant 23:	"Introduction to AI and ChatGPT: Educators should gain a basic understanding of how AI works and how ChatGPT specifically operates. This includes understanding the technology's capabilities and limitations, its potential impact on education, and the ethical considerations involved. Pedagogical Integration: Educators should learn how to effectively integrate ChatGPT into their teaching strategies. This includes identifying appropriate use cases, designing lessons and activities that incorporate ChatGPT, and assessing its effectiveness in enhancing learning outcomes."
			[S] Informant 11:	"Educators need to have professional development about how to best use ChatGPT in the classroom and how to best prepare students to use it."
			[H] Informant 32:	"They should take an online class that deals with ChatGPT and their benefits and negatives. They should understand how it fully works and its origin."
			[H] Informant 60:	"For many educators who are not tech savvy structures should be given training and ChatGPT to at least have a familiarity with it, and to understand the information that is accessible by students and how it can be utilized in your classroom to their advantage and disadvantage."
Training on the responsible and ethical utilization of ChatGPT (16, 24.6%)	9 (23.1%)	7 (26.9%)	[S] Informant 23:	"Academic Integrity: Educators should be equipped to address academic integrity concerns related to ChatGPT. This includes understanding how to prevent plagiarism, promoting responsible use of technology, and establishing clear guidelines for citing AI-generated content."
			[S] Informant 10:	"Educational institutions have the obligation as AI becomes more mainstream to ensure that their staff and faculty are properly trained on the technical uses as well as the practical ones, specifically how the principles are applied by both teachers and students to ensure that ethical considerations are applied."
			[H] Informant 58:	"Generalized training on the ethical, bias, equity, cultural responsiveness, and social norm issues raised by the implementation of artificial intelligence and specifically ChatGPT."
			[H] Informant 35:	"Institutions should instruct educators about best practices in terms of using artificial intelligence responsibly. They also need to be aware of the possibility of negative consequences such as cheating or plagiarism."

Training on identifying misuse and implementing effective responses (10, 15.4%)	7 (17.9%)	3 (11.5%)	[S] Informant 8:	"I feel I would be helped by being trained in looking out for clear signs of when a student used ChatGPT in the homework, especially when it comes to long form papers."
			[S] Informant 28:	"I believe we should be given training in how to identify when students are caught using it. I also believe that we should be given training or have discussions on appropriate penalties for inappropriate use of ChatGPT."
			[H] Informant 59:	"It should include training on ways to identify AI-generated content. It should include instructions on using technology that can identify AI-generated answers and what to do when students submit AI-generated assignments."
Training on the impact of ChatGPT in education (3, 4.6%)	2 (5.1%)	1 (3.8%)	[S] Informant 22:	"How will ChatGPT improve or help our teaching in order for students to learn more."
			[H] Informant 44:	"Training can be carried out on the overall educational changes to unfold to analyze."
Others (8, 12.3%)	4 (10.3%)	4 (15.4%)	[S] Informant 16:	"I do not think that educators should be the ones to have to monitor and learn about this tool, it should be the job of students legal guardians to monitor their work at home."
TOTAL (65, 100%)	39 (100%)	26 (100%)		