

# What Have People Discussed about ChatGPT in Malaysian Education? A Qualitative Content Analysis of News Articles

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**Abstract:** ChatGPT became a top trending news topic in late 2022. People were astounded by the artificial intelligence (AI) chatbot's ability to write emails, essays and computer codes; edit and correct grammar; provide suggestions; and so on in a human-like conversational manner. Many months after its official launch, people are still debating whether and how the chatbot might transform the way people do things in various sectors. One such sector is education. Academics and educational institutions have been seeking to figure out how to effectively adapt teaching and learning in response to ChatGPT. This study examined what has been discussed in the news about ChatGPT in Malaysian education during the first few months following its launch. This study first searched for articles in three major Malaysian English newspapers using the search terms "ChatGPT" and "education". Then, qualitative content analysis was employed to classify discussions about ChatGPT in Malaysian education published in 16 articles into categories and subcategories. The findings show that the discussions in the news could be coded into five level-one categories and 14 level-two subcategories. The findings of this study could help academics and educational institutions gain a better understanding of people's attitudes, concerns, and sentiments towards ChatGPT in Malaysian education to adapt learning design and delivery as well as point to future research directions.

**Keywords:** ChatGPT, Chatbot, Education, News Articles, Qualitative Content Analysis, Teaching and Learning

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## 1. Introduction

Since its launch in late 2022, ChatGPT by OpenAI has sparked considerable interest in the chatbot's capabilities and the challenges it may pose to the education sector (Crawford, Cowling and Allen, 2023; Kohnke, Moorhouse and Zou, 2023). Some studies have attempted to examine the opportunities, benefits, threats, challenges, and implications that ChatGPT or artificial intelligence (AI) chatbots bring to teaching and learning. Some examples of these studies include Adiguzel, Kaya and Cansu (2023), Dwivedi et al. (2023), Kasneci et al. (2023), and Rahman and Watanobe (2023).

ChatGPT is trained on large language models and can respond to questions in a conversational style through a simple user interface. Users have come up with creative ways to ask the chatbot to write things like lyrics, letters, and computer codes, which raises serious concerns about the authenticity and ethics of the work it produces. These concerns are especially relevant to learning assessment in education because students may enlist the help of chatbots to complete their assessments, making it difficult for assessors to determine whether the work is written by students or chatbots (Benuyenah, 2023; Geerling et al., 2023).

Because the use of ChatGPT is still in its early stages, before academics and educational institutions could better understand its applications and implications for teaching and learning, some educational institutions, such as a US school district in New York (Fahr, 2023), some Hong Kong universities (Mok, 2023), and a French university (The Star, 2023a), have banned the use of the chatbot in assessment due to concerns about plagiarism. Others, such as several Japanese institutions (The Star, 2023b), have restricted its use, while others, such as some Australian universities (Starcevic, 2023), have redesigned their assessment practices.

Skavronskaya, Hadinejad and Cotterell (2023) recommend that more studies be undertaken to better understand the implications of chatbots on education so that academics may stay relevant and adapt their learning design and delivery. To contribute to this understanding, this study attempts to answer the question "what have people said" about ChatGPT in Malaysian education in the news in the first few months following its launch. This investigation aims to achieve a more in-depth understanding of the discussion in order to provide deeper insight into people's views, attitudes, and concerns about ChatGPT in education in Malaysia.

The remainder of this paper provides a background to the research, explains the research design and method, presents the data analysis and results, and concludes with a discussion of the study findings.

## 2. Research background

### 2.1 ChatGPT

ChatGPT is a generative AI chatbot developed by OpenAI, a company that specialises in AI solutions. It is built on the large language model GPT-3.5. Unlike a traditional search engine, which returns pages of web links, a chatbot returns a specific, summarised text response to the user's questions. It can understand questions and learn from its own responses (OpenAI, 2022).

Launched on 30 November 2022, ChatGPT is free to use and can respond to questions in a dialogue format, mirroring the way two people converse with each other. In addition to text, users can also utilise speech recognition and text-to-speech functions to converse with the chatbot. The chatbot can communicate in many languages, although the quality and accuracy of responses may vary (OpenAI, 2022).

Although ChatGPT users may find the chatbot useful in many ways, such as planning a trip, writing an essay, or coding a software application, the GPT-3.5 model has several known limitations. Because it was trained on a huge dataset up to 2021, it is unable to answer questions with information after that date (OpenAI, 2022). Furthermore, OpenAI (2022) cautions that ChatGPT responses are not always accurate and may be biased in some cases.

OpenAI launched ChatGPT Plus on 1 February 2023, charging users a monthly subscription price of USD 20 for faster response and improved access (OpenAI, 2023). ChatGPT Plus customers were given access to a newer model, the GPT-4, on 14 March 2023 (OpenAI, 2023). The GPT-4 model performs better in advanced reasoning, can handle more complex questions, and can search the web for current information to provide more up-to-date responses (OpenAI, 2023).

ChatGPT and ChatGPT Plus compete with other chatbots, such as Google Bard and Microsoft Bing. These rival chatbots, which are free to use, also claim to be able to search the web for current information and are capable of citing sources of information (Google, n.d.; Microsoft, n.d.).

### 2.2 Implications of AI Chatbots for Education

AI chatbots are a potentially disruptive technology that can lead to a paradigm shift in transforming conventional teaching and learning (Adiguzel, Kaya and Cansu, 2023; Ivanov and Soliman, 2023; Tlili et al., 2023). With more chatbots becoming available, it is not surprising that they will eventually become an educational tool similar to calculators or computers (Geerling et al., 2023), presenting both opportunities and challenges, particularly in teaching, learning, and academic research (Dwivedi et al., 2023).

Kasneci et al. (2023) explain that chatbots can help students learn in various ways, such as developing reading, writing, and research skills, as well as critical thinking and problem-solving skills. Dwivedi et al. (2023) deem that, in addition to obtaining feedback on their work, students can use chatbots to gain foundational information that can be used to develop higher-order thinking skills. Rahman and Watanobe (2023) suggest that chatbots can function as tutors who are constantly available to answer questions and provide feedback to students at any time and location. Chatbots can also assist academics in their teaching, for example, in designing learning activities and exercises, developing lesson plans, and generating questions and quizzes (Kasneci et al., 2023; Rahman and Watanobe, 2023; Su and Yang, 2023).

However, despite the benefits, chatbots also bring challenges. Kasneci et al. (2023) identify twelve challenges in the use of chatbots in education: (1) copyright issues; (2) bias and fairness; (3) over-reliance by learners; (4) over-reliance by educators; (5) lack of understanding and expertise; (6) difficulty distinguishing model-generated or student-generated answers; (7) training and maintenance costs; (8) data privacy and security; (9) sustainable usage; (10) cost to verify information and maintain integrity; (11) difficulty distinguishing real knowledge from unverified model output; and (12) limited adaptability.

The use of chatbots in assessment frequently comes under the spotlight as it raises concerns about plagiarism and cheating (Skavronskaya, Hadinejad and Cotterell, 2023). Student misuse of chatbots might result in plagiarism, and it is difficult for assessors to discern work generated by chatbots (Dwivedi et al., 2023). In addition, over-reliance on chatbots may also reduce students' desire to learn to write and impede their cognitive development (Dwivedi et al., 2023). Kasneci et al. (2023) also warn that relying too much on chatbots can lead to students not putting in their own effort to problem-solve, which can hinder the development of creativity,

critical thinking, and problem-solving skills in students. Thus, academics should use chatbots to augment rather than replace learning delivery.

Academics and students should develop digital competency in using chatbots before using them for teaching and learning. Academics need to understand the benefits and downsides of chatbots, as well as how to provide students with the knowledge and skills required to use chatbots as a learning tool ethically and responsibly (Kohnke, Moorhouse and Zou, 2023; Tlili et al., 2023). Guidelines and policies for the use of chatbots in education are also required to reduce academic dishonesty (Benuyenah, 2023; Dwivedi et al., 2023; Tlili et al., 2023).

Academics should design assessments that encourage students to use chatbots as a learning tool instead of relying on them to generate final answers. Academics should also create learning environments that provide learning experiences that chatbots cannot replace (Geerling et al., 2023). Furthermore, in response to technological advances in chatbots, academics will have to adapt their teaching and assessment strategies (Benuyenah, 2023), review curriculum, change teaching methods, and revise assessment criteria (Kohnke, Moorhouse and Zou, 2023; Su and Yang, 2023; Tlili et al., 2023).

### 3. Research Design and Method

As the official launch of ChatGPT was on 30 November 2022, this study searched the top three English newspapers in Malaysia for articles that contained both search terms "education" and "ChatGPT" that were published between that date and 30 April 2023 (i.e., the cutoff date before a qualitative content analysis could begin at the beginning of May 2023). A search on Google found a total of 411 articles. A cloud-based web scraping software was then used to retrieve the contents of the articles from the newspaper websites. These articles were then filtered to remove any articles that were not specific to ChatGPT in education in the first round and those that were not specific to the Malaysian context in the second round. Table 1 provides a summary of the search and filter results. A total of 16 articles were retained for the subsequent qualitative content analysis.

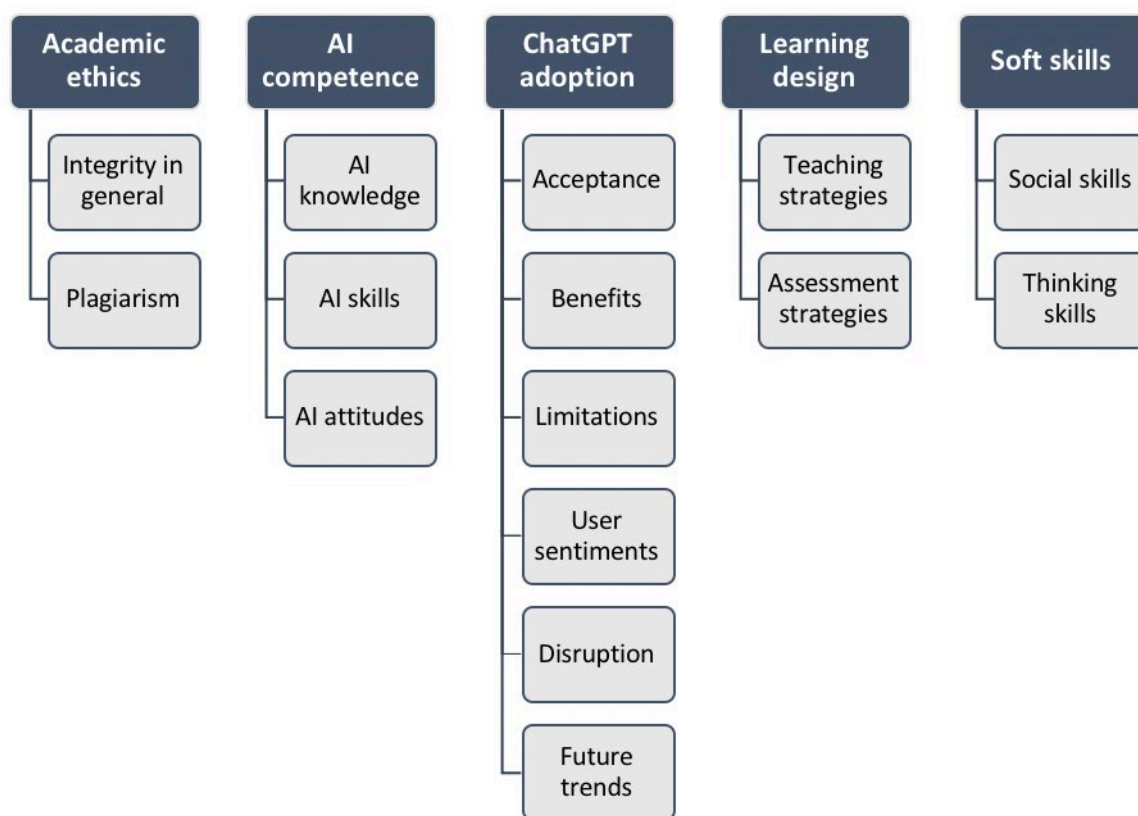
**Table 1: Summary of the article search and filter results**

	<b>New Straits Times</b>	<b>The Sun</b>	<b>The Star</b>	<b>Total</b>
<b>Initial articles</b>	58	26	327	411
<b>After 1<sup>st</sup> filter round (not specific to ChatGPT in education)</b>	10	4	37	51
<b>After 2<sup>nd</sup> filter round (not specific to the Malaysian context)</b>	4	3	9	16

This study conducted a qualitative content analysis to examine the article texts to identify the topics of discussion by categories and subcategories (Mayring, 2014; Schreier, 2012). This study employed the eight-step process proposed by Schreier (2012) to conduct the analysis: (1) decide on the research question; (2) select the material; (3) build a coding frame; (4) segment coding units; (5) conduct trial coding; (6) evaluate the coding frame; (7) conduct the main analysis; and (8) present findings.

Following an inductive approach and based on the 16 articles, the study created a two-level coding frame that included five level-one categories and 14 level-two subcategories. The level-one categories represent the primary dimensions, and the level-two subcategories represent the subdimensions. The coding frame was built to meet four methodological requirements: unidimensionality, mutual exclusiveness, exhaustiveness, and saturation (Schreier, 2012). Figure 1 depicts the coding frame for this study.

Figure 1: Coding frame



The individual articles were the units of analysis in this study, and the article texts that were relevant to ChatGPT in Malaysian education were segmented into coding units. The coding units could be a partial sentence, a complete sentence, or multiple sentences. There were a total of 209 coding units. The same coder then pilot-tested the coding frame in two rounds, with a two-week gap in between, as suggested by Schreier (2012). There were no modifications to the categories or subcategories between the two rounds. With a percentage agreement of 82.4% (i.e., the number of coding units on which the coder agreed divided by the total number of coded units), intra-coder stability was satisfactory. Each coding unit was then coded into one or more subcategories in the main analysis. A coding unit, however, could not be assigned to more than one subcategory within the same category. To maintain coding consistency, the coding was done by a single coder with a two-week gap in between. In total, 209 coding units were coded 244 times in the main analysis, with one coding unit being coded an average of 1.2 times.

#### 4. Data Analysis and Results

Table 2 shows the frequency and percentage of the coding units that have been coded into subcategories. The top five subcategories in order of frequency are: benefits (19.3%), plagiarism (13.9%), acceptance (8.6%), thinking skills (7.4%), and user sentiments (6.6%). The bottom five subcategories are: assessment strategies (4.9%), AI skills (3.3%), future trends (2.9%), AI attitudes (2%), and social skills (2%).

Table 2: Frequency and percentage of coding units coded into a subcategory

Subcategory	Frequency	Percentage (%)
Benefits	47	19.3%
Plagiarism	34	13.9%
Acceptance	21	8.6%
Thinking skills	18	7.4%
User sentiments	16	6.6%

Subcategory	Frequency	Percentage (%)
Disruption	15	6.1%
AI knowledge	15	6.1%
Limitations	14	5.7%
Integrity in general	14	5.7%
Teaching strategies	13	5.3%
Assessment strategies	12	4.9%
AI skills	8	3.3%
Future trends	7	2.9%
AI attitudes	5	2.0%
Social skills	5	2.0%
<i>Total</i>	<i>244</i>	<i>100.0%</i>

Table 3 shows the frequency and percentage of the coding units that have been coded into a subcategory within and across categories. Within the ChatGPT adoption category, the discussion about benefits led other topics by a large percentage (39.2%). AI knowledge (53.6%), plagiarism (70.8%), and thinking skills (78.3%) were the leading topics in the AI competence, academic ethics, and soft skills categories, respectively. There appeared to be a rather equal discussion of teaching strategies (52%) and assessment strategies (48%) in the learning design category. Across categories, the ChatGPT adoption category garnered the most discussion (49.2%), followed by academic ethics (19.7%), AI competence (11.5%), learning design (10.2%), and soft skills (9.4%).

**Table 3: Frequency and percentage within and across categories**

Category	Subcategory	Frequency	Within category percentage (%)	Across category percentage (%)
Academic ethics	Plagiarism	34	70.8%	
	Integrity in general	14	29.2%	
	<i>Subtotal</i>	<i>48</i>	<i>100.0%</i>	<i>19.7%</i>
AI competence	AI knowledge	15	53.6%	
	AI skills	8	28.6%	
	AI attitudes	5	17.9%	
	<i>Subtotal</i>	<i>28</i>	<i>100.0%</i>	<i>11.5%</i>
ChatGPT adoption	Benefits	47	39.2%	
	Acceptance	21	17.5%	
	User sentiments	16	13.3%	
	Disruption	15	12.5%	
	Limitations	14	11.7%	
	Future trends	7	5.8%	
	<i>Subtotal</i>	<i>120</i>	<i>100.0%</i>	<i>49.2%</i>
Learning design	Teaching strategies	13	52.0%	
	Assessment strategies	12	48.0%	
	<i>Subtotal</i>	<i>25</i>	<i>100.0%</i>	<i>10.2%</i>
Soft skills	Thinking skills	18	78.3%	
	Social skills	5	21.7%	
	<i>Subtotal</i>	<i>23</i>	<i>100.0%</i>	<i>9.4%</i>

## **5. Discussion and Conclusion**

The category with the most subcategories is ChatGPT adoption. ChatGPT adoption was the most often discussed topic, accounting for over half of the total discussion. The launch of ChatGPT has sparked a great deal of interest in the chatbot. As a result, it is not surprising that there was a lot of discussion concerning its adoption for education in terms of benefits, acceptance, user sentiments, disruption, limitations, and future trends. The benefits of ChatGPT were the most frequently discussed topic in this category. People appeared eager to explore how they could benefit from using the chatbot, e.g., receiving feedback on their work or finding solutions to their problems (Ibrahim and Lee, 2023; Mohamed and Razawi, 2023). Although people recognised the limitations of ChatGPT, such as information accuracy or feedback quality (Goh, 2023; Mohamed and Razawi, 2023), and how it may change learning delivery (Ponnudurai, 2023; Wing, 2023) or replace humans in future jobs (Rahman, 2023b; Yeoh, 2023), it appears that people were generally supportive of embracing and adopting the chatbot (Lim, 2023; Wing, 2023) and anticipated that it will become more powerful at a faster rate in the future (Ponnudurai, 2023; Rahman, 2023a).

Academic ethics was the second most often discussed topic, accounting for over one-fifth of the total discussion. Plagiarism issues were the most frequently discussed topic in this category. People were concerned about how students may use ChatGPT to complete their assignments while maintaining academic integrity in general (Muthiah and Carvalho, 2023; Yeoh, 2023) and avoiding plagiarism because it can be difficult to distinguish whether an assignment is the student's own work or produced by the chatbot (Muthiah, 2023; Yeoh, 2023). People also discussed the use of anti-plagiarism software to detect plagiarism. These findings are similar to the concerns that have also been reported in past studies (e.g., Dwivedi et al., 2023; Kasneci et al., 2023; Skavronskaya, Hadinejad and Cotterell, 2023).

AI competence was the third most often discussed topic, accounting for slightly more than one-tenth of the total discussion. The discussion centred around a need to help students use ChatGPT ethically and responsibly by establishing some guidelines, principles, or skills (Muthiah and Carvalho, 2023; Yeoh, 2023). This discussion was highly similar to the concept of digital competence as defined by the European Commission in terms of knowledge, skills, and attitudes (European Commission, 2019). The need for AI knowledge was the most frequently discussed topic in this category. These findings support the suggestions made by Dwivedi et al. (2023), Kohnke, Moorhouse and Zou (2023), and Tlili et al. (2023) to develop competence in using chatbots ethically and responsibly.

Learning design was the fourth most often discussed topic, accounting for around one-tenth of the total discussion. The discussion was fairly even between teaching and assessment strategies. People discussed the need to adapt teaching strategies, such as teaching methods, pedagogies, the role of academics, and so on (Kuan, 2023; Rahman, 2023b), as well as assessment strategies, such as using authentic assessment or revising assessment criteria, to keep up with the developments in ChatGPT and how the chatbot may be better integrated into learning delivery (Kuan, 2023; Ponnudurai, 2023). These findings are consistent with the conclusions made in past studies that academics and educational institutions should adapt teaching and assessment strategies to coexist with chatbots (e.g., Benuyenah, 2023; Kohnke, Moorhouse and Zou, 2023; Su and Yang, 2023; Tlili et al., 2023).

Soft skills were the fifth most often discussed topic, accounting for just under one-tenth of the total discussion. The discussion of soft skills can be divided into two categories: social skills and thinking skills. Thinking skills were the most frequently discussed topic in this category. People discussed the idea that using ChatGPT does not help students develop personality traits such as empathy, attitudes, emotions, or interpersonal skills (Ngo, 2023; Raman, 2023). However, the discussion appeared to differ on whether the chatbot supports or hinders students from developing critical thinking, problem-solving, or creativity skills (Muthiah and Carvalho, 2023; Zaideen, 2023). This finding concurs with those of Dwivedi et al. (2023) and Kasneci et al. (2023) that over-reliance on ChatGPT may impede students from learning these crucial soft skills.

Overall, based on the top five most often discussed topics, people appeared keen to discuss how they could benefit from using ChatGPT, although it was a relatively new technology to them. Others, on the other hand, were concerned about the effects of the chatbot, particularly plagiarism issues. It is worth noting that people were open to using ChatGPT as a tool. They were aware, however, that while the chatbot is beneficial for specific tasks, it is limited in terms of enhancing cognitive skills such as creative thinking, problem-solving, and so on. People also had mixed feelings about the chatbot. While some people expressed positive sentiments (e.g., fun, impressive, exciting), others indicated negative sentiments (e.g., nervous, scary, anxiety).

In conclusion, this study has answered the question "what have people said" about ChatGPT in Malaysian education in the news following the first few months of its launch by identifying the categories and subcategories (along with frequency and percentage) of the most discussed topics in news articles. The findings help academics and educational institutions obtain a better understanding of the issues and challenges arising from the use of chatbots in education.

The findings have three practical implications for academics and educational institutions as chatbot functions and features continue to evolve. First, adapt learning design and delivery to improve student soft skill learning while leveraging chatbots as an educational tool; second, update assessment strategies and policies to address academic ethics issues; and third, incorporate training into the curriculum to develop AI competence in students in preparation for the anticipated wider use of AI in the future. Furthermore, the findings can also serve as a springboard for future research. Future AI research may conceptualise variables based on the categories and subcategories identified in this study to develop a research model.

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