



الجامعة الإسلامية بالمدينة المنورة  
ISLAMIC UNIVERSITY OF MADINAH

# مجلة الجامعة الإسلامية للعلوم التربوية والاجتماعية

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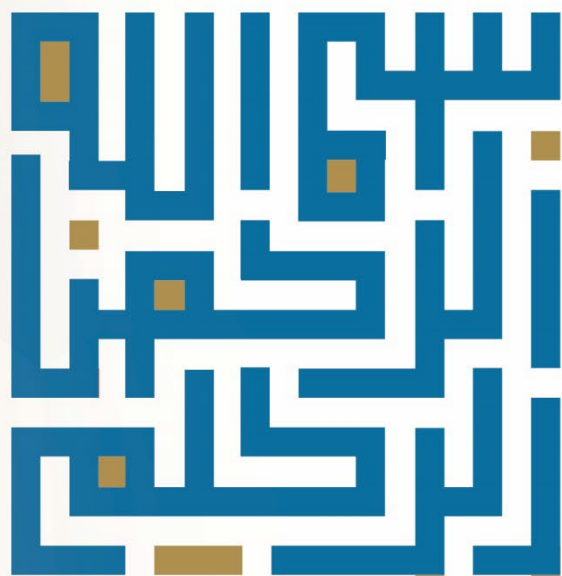




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البحوث المنشورة في المجلة  
تعبر عن آراء الباحثين ولا تعبر  
بالضرورة عن رأي المجلة

جميع حقوق الطبع محفوظة  
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## The Utilization of ChatGPT in Education: Opportunities and Challenges

### استخدام ChatGPT في التعليم: الفرص والتحديات

إعداد

د. سلطان بن حماد الشمري

أستاذ تقنيات التعليم المشارك

قسم تقنيات التعليم - كلية التربية - جامعة حائل

**Dr. Sultan Hammad Alshammari**

Associate Professor of Educational Technology

Department of Educational Technology - Faculty of Education-  
University of Ha'il

**Email: [sh.alshammari@uoh.edu.sa](mailto:sh.alshammari@uoh.edu.sa)**

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## المستخلص

منذ إطلاق تطبيق شات جي بي تي ChatGPT في نوفمبر ٢٠٢٢، أعرب اختصاصيو التربية عن بعض المخاوف بشأن استخدامه في التعليم. تستعرض هذه الدراسة الأدبيات ذات الصلة، بهدف إثراء فهم الفوائد والعيوب المحتملة لإستخدام ChatGPT في التعليم. يمكن لـ ChatGPT دعم المعلمين والطالب، وإعداد التقييمات، وتقديم الدعم التعليمي على مدار الساعة طوال أيام الأسبوع، والتوجيه المهني والمشورة. ومع ذلك، فإن هنالك مشاكل محتملة متعلقة باستخدامه، بما في ذلك تلك المتعلقة بالمعلومات غير الدقيقة والمتحيزة، والإنتحال الأدبي، والإمتحانات، والحاجة الى التدريب لإستخدامه بفعالية. تناقش هذه الدراسة الجوانب الإيجابية والسلبية لإستخدامه بناءً على مراجعة علمية للأدبيات السابقة ذات الصلة. يجب أن تعمل المؤسسات والجامعات بشكل عاجل لتحديث سياساتها والتأكد من استخدام ChatGPT بشكل مناسب.

**الكلمات المفتاحية:** ChatGPT، الذكاء الاصطناعي التوليدي، تقنيات التعليم، التعليم،

مراجعة أدبية.

## Abstract

Since the establishment of the application ChatGPT in November 2022, educators have expressed some concerns regarding its use in education. This study reviews the relevant literature, aiming to enrich the understanding of the potential benefits and drawbacks of using ChatGPT in education. ChatGPT can support instructors and students, prepare assessments, and provide 24/7 learning support, career guidance and counselling, However, it also comes with potential issues, including those related to inaccurate and biased information, plagiarism, exams and training to use it effectively. This study discusses both the positive and negative aspects. Institutions and universities should act immediately to update their policies and ensure that ChatGPT is used appropriately .

**Keywords:** ChatGPT, Generative AI, Educational Technologies, Education, Literature review

### **Introduction:**

Artificial intelligence (AI) has continued to develop recently and has been utilized in several fields, specifically in education. AI applications are trained using large amounts of data; they are designed to simulate the human brain and deal with specific tasks (Bengio et al., 2021). Integrating AI tools into education has recently become a topic of significant interest. For example, they have been adopted to enhance academic support and administrative services (Zawacki et al., 2019). AI also has the ability for transforming education by automating repetitive and tedious tasks, enabling the analysis of data and providing new forms for assessment and learning (Chen, 2020).

Some studies had examined the benefits of applying AI in the field of education (Chien & Hwang, 2023; Zhang & Aslan, 2021). AI could assist in understanding vast quantities of data quickly and recognize relationships and patterns that may be hard to detect by humans. This could enable researchers to focus on other creative and complex tasks (Dignum, 2018). AI may also be able to create personalized learning pathways for students (González-Calatayud et al, 2021; Hsu et al., 2023). It could analyze students' abilities and styles of learning and provide them with individual suggestions and recommendations to assist them in achieving their goals. Moreover, AI can support e-learning, leading to accessibility to education, inclusive and equitable (Murtaza, 2022; Pelletier et al., 2022). However, some challenges and concerns regarding the utilization of AI have been raised. For example, there is a risk that AI will produce biased or unreliable results.

By the end of 2022, ChatGPT application was launched by Open AI. ChatGPT was programmed using a large dataset of texts, allowing it to generate responses which are similar to humans' questions and prompts (Kooli, 2023). Recently, ChatGPT has become prevalent in several fields, specifically in education. Because of the increasing relevance of "big data" and the need of understanding data faster, ChatGPT is seen as a valuable application for both academics and students. A study of Chen et al. (2020),

however, found that few studies have examined the use of AI applications in the field of education, despite the increased interest in this topic.

Despite the successful use of ChatGPT in many fields, it has also introduced new threats and challenges to education. It can provide direct answers to students' inquiries and questions, as well as complete examinations and assignments on their behalf, leading to cheating concerns. Thus, some institutions have restricted the access to ChatGPT in campus (Dibble, 2023). Mhlanga (2023) reviewed the implications for using ChatGPT in the field of education, and his study revealed that educators are concerned that students might use ChatGPT to complete assignments due to its ability in generating texts quickly. Mhlanga asserted that it was essential to use ChatGPT ethically. Similarly, Sallam (2023) found that there were concerns in academia regarding plagiarism and inaccurate or incorrect citations. Thus, immediate attention is required to ensure that the benefits of ChatGPT could be gained, and its drawbacks minimized. Even though Mhlanga (2023) and Sallam (2023) have shed light on some concerns associated with ChatGPT, further comprehensive and critical reviews regarding its positive and negative applications are needed. This study will review the literature to critically investigate the benefits and drawbacks of applying ChatGPT in education.

### **Literature Review:**

AI applications such as ChatGPT have received more attention and become more prevalent in education in recent years. Due to their novelty, however, few studies have focused on their use and they remain under investigation. ChatGPT is considered as a valuable resource in education, which can enhance writing, generate texts, summarize information, create outlines, save times and improve the work quality. Furthermore, it could detect errors in style and grammar, making the writing content clearer and easier to understand (Atlas, 2023). It is also used to support students' research by providing related resources and information on a specific subject, recommending new research topics, suggesting unconsidered aspects and enhancing their understanding of topics (Kasneci et al., 2023).

Chen et al. (2020) reviewed the current use of ChatGPT in education and its significant advantages, including increased accessibility, improved efficacy and personalized learning. Zhang and Aslan (2021) added that, using ChatGPT may increase learners' motivation and engagement, enhance feedback and assessment and increase the cost-effectiveness and efficacy of teaching. Pedro et al. (2019) noted that it could be utilized for automating repetitive tasks, saving time for complex tasks and creativity. Tlili et al. (2023) explored how the application can support students' experiences with e-learning. They found that students preferred using ChatGPT to engage in lesson activities, as it provides an interactive and engaging experience. Furthermore, Kuhail et al. (2023) asserted that ChatGPT could support students with instant feedback regarding any specific topic and personalize their learning experiences.

As with other newly established technologies, there are some concerns about using ChatGPT in education. For instance, learners might copy and paste contents without properly critically evaluating or analyzing the information and sources or failing to provide proper citations for the original resources. Some believe that these issues make ChatGPT unsuitable for use in education (García-Peñalvo, 2023). Academics and teachers are worried that learners might use ChatGPT for producing essays and assignments. It can generate texts and paragraphs that evade plagiarism-detecting applications. However, Atlas (2023) mentioned that it is a myth that using ChatGPT is inherently considered plagiarism, as plagiarism refers to the use of someone else's ideas without citing or giving credit to the original source. Thus, students and authors should declare that the ChatGPT was used and cited appropriately.

Pedro et al. (2019) discussed some additional challenges which are associated with the use of ChatGPT in education. Pedro et al. include the need to develop public policy for its sustainable use, ensure equity and inclusion, prepare academics and teachers, enhance the inclusivity and quality of data systems, support relevant research and identify the ethical concerns with collection, use and dissemination of data. These issues require

public discussions and national partnerships regarding security, ethics, transparency and accountability. As a result of such concerns, some educational institutes have blocked ChatGPT because students could use it to produce their work and assignments (Ropek, 2023). However, preventing students from using ChatGPT or attempting to ban it may not be an effective approach to deterring learners (García-Peñalvo, 2023). It is expected that ChatGPT will continue becoming an important part of writing process, same to how computers and calculators revolutionized science and math (McMurtrie, 2022).

Due to the recent establishment of ChatGPT and lack studies focusing on its benefits in Education, further studies are needed for gaining a deep understanding of these expected benefits and the associated challenges that are associated with using it. Thus, this study reviews the literature and explores both the positive and negative aspects of using ChatGPT in Education.

#### **Research problem:**

Since the release of ChatGPT in last November 2022, ChatGPT has been utilized in many fields such as nursing, medical skills, mathematics, and business marketing (Chien, & Hwang, 2023 ; Frieder et al., 2023 ; Han et al, 2023). However, there is still a lack in review studies that examined its potential benefits and drawbacks in education field ( Dibble, 2023 ; Kasneci et al, 2023 ; Megahed, 2023 ). Thus, more studies are needed to enrich the literature. Furthermore, there is a lack in understanding whether ChatGPT can support education in terms of teaching and learning, and how possible challenges can be avoided or minimized. Thus, further studies are needed to expand our understanding regarding the potential benefits that are associated with utilizing ChatGPT in education as well as knowing more about the related possible challenges. Thus, this study aims at applying a rapid review for assessing the potential benefits and drawbacks of utilizing ChatGPT in education.



### **Research Questions:**

This study aims at answering the following research questions:

Q1: What are the opportunities of utilizing ChatGPT in education?

Q2: What are the challenges and concerned issues that are associated with the utilization of ChatGPT in education?

### **Research Aims:**

To review the opportunities of utilizing ChatGPT in education found in recent studies.

To review the challenges and concerned issues that are associated with utilization ChatGPT in education found in recent studies.

### **Terminology of study:**

#### **ChatGPT.**

ChatGPT is defined as a programmed application which using a large dataset of texts, allowing it to generate responses which are similar to human to questions and prompts (Kooli, 2023).

#### **Opportunities.**

Opportunity is defined as a specific situation that can be achieved and improved (Dimov, 2020). For this study, it is defined as the chances and improvement that can be gained when ChatGPT is utilized in education.

#### **Challenges.**

Challenge is defined as difficult tasks which are hard to be achieved for specific circumstances (Vaskinn et al., 2009). In this study, it is defined as the difficulties and concerned issues that are associated with utilizing ChatGPT in Education.

### **Methodology:**

#### **The rapid review approach.**

A rapid review approach was applied in this study. This is defined as a sort of synthesis knowledge, in which some components or stages of a

systematic review could be omitted or simplified for producing information and knowledge quickly (Khangura et al., 2012). As ChatGPT has rapidly begun to attract great interest among academics and students, it is important to understand its benefits and challenges so immediate action can be taken. Thus, a rapid review process was preferable in this context; a systematic review could require months or years to be conducted (Tricco et al., 2015). This approach allowed us to consider recent published materials and therefore findings. Therefore, this rapid review may provide interesting and valuable insights that will assist researchers, policymakers and practitioners to deal with the impact of ChatGPT in education promptly.

#### **Inclusion and exclusion criteria.**

The rapid review included most recent academic articles that were published in the period between December 2022 and May 2023. Nonacademic articles were excluded. As the keywords for the search were “ChatGPT” and “Education”, all of the articles chosen had to discuss both topics. Furthermore, only articles written in English were included. Table 1 shows both the criteria of inclusion and exclusion.

Criterion	Inclusion	Exclusion
Topic	ChatGPT use in Education	Topic other than the ChatGPT use in education
Language	English	Other languages
Type of article	Academic	Not academic articles or non-peer-reviewed journals
Time Period	December 2022 to May 2023	Other time periods

Table 1: Criteria of inclusion and exclusion of articles.

#### **Search strategies.**

Adopting a similar process to those used in systematic reviews and meta-analyses, we conducted a search and selected relevant articles. The period chosen was between December 2022 and May 2023. Only peer-reviewed articles were selected. The main keywords were “ChatGPT” AND

“Education”. Several electronic databases were selected for conducting this rapid review, including the Web of Science, Scopus, IEEE Explore and ERIC. Despite this, few articles related to the topic were found. Thus, Google Scholar was included for further searching. As a result, forty-two academics articles were reviewed and included in this study. This approach allowed us to collect the relevant materials and conduct this study. As shown in table 2, most academic articles were collected from google scholar database (15, 35.7%) followed by Web of Science (11, 26.2%), while Scopus database was in third place (9, 21.4%), and the fewest articles were collected from ERIC database (3, 7.1%).

		Frequency	Percent
Databases	Google Scholar	15	35.7
	WoS	11	26.2
	Scopus	9	21.4
	IEEE explore	4	9.5
	ERIC	3	7.1
	Total	42	100.0

Table 2: Demographic information of collected resources.

Furthermore, the pie chart which shows the demographic information of collected resources is shown in below in Fig 1:

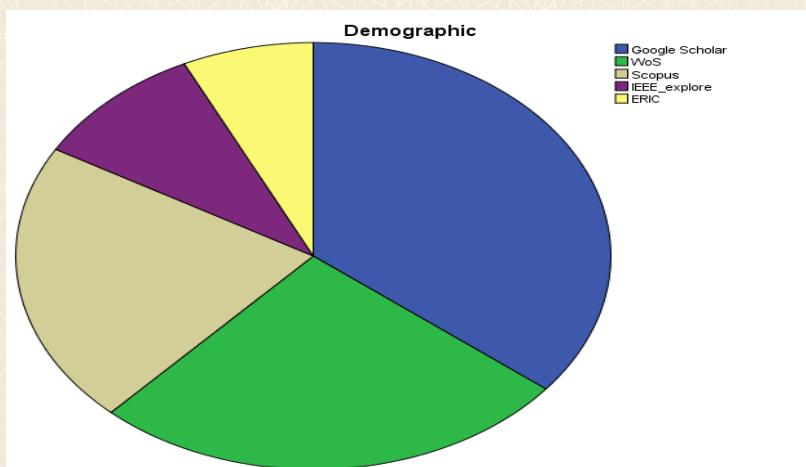


Fig 1: Demographic information of collected resources.

## **Results and Discussion:**

### **Opportunities of utilizing ChatGPT in education.**

#### **Supporting instructors and students.**

The review findings showed that ChatGPT could assist both instructors and students. It can support instructors with two core aspects of teaching: namely, preparation (e.g. generating contents; providing recommendations and suggestions; translating) and assessment (e.g. evaluating students' performance and generating tasks). Furthermore, ChatGPT can guide teachers to recognize the skills and knowledge that can be covered in their lessons (Tlili et al, 2023). Megahed et al. (2023) prompted ChatGPT for generating a syllabus of statistics course for undergraduate students and found that its suggestion could be utilized without any need for modifications. Moreover, Zhai (2023) determined that ChatGPT was capable in providing suggestions and recommendations for the field of special education, which were beneficial to students with special needs.

#### **Preparing assessments.**

ChatGPT can assist instructors by generating quizzes, exercises and scenarios that they can use to assess students (Wang et al, 2023; Khan et al, 2023). However, Al-Worafi et al. (2023) have argued that the suggested assessments of ChatGPT do not cover the all objectives of a course. Thus, while ChatGPT could assist as a guide for instructors, they should not totally depend on it to replace their efforts.

#### **Supporting learning:**

ChatGPT could be utilized as virtual tutor for supporting students' learning. It can assist with six main areas of learning: summarizing information, answering questions, enabling collaboration, checking for comprehension, providing feedback and offering assistance with drafting (Pardos, 2023). Rudolph et al. (2023) stated that ChatGPT can facilitate collaboration in learning activities as it can generate different scenarios that require students to work together. It can also provide templates for discussions, debates, and peer review (Kasneji et al, 2023).

### **24/7 support:**

ChatGPT can be integrated with online learning platforms to allow students to access information from anywhere and anytime. The chatbot works automatically and continuously, so it can always respond to students' requests and questions promptly (Thu et al., 2023)

### **Career guidance and counselling:**

ChatGPT can provide deep, detailed information regarding any career field, as well as provide students with advice and allow them to explore possible jobs. This gives them a clear understanding of the opportunities in different fields and provides them with options to develop a career (Thu et al., 2023).

Challenges and concerned issues that are associated with utilization ChatGPT in education.

### **Inaccurate and biased information:**

However, ChatGPT can also generate fake and incorrect information. Mogali (2023) found that it generates well-written content but with inaccurate information. It also can generate fake citations and sources (Mogali, 2023; Szabo, 2023). Furthermore, Megahed et al. (2023) determined that ChatGPT produces incorrect codes for programming and is not able to resolve and detect errors. Jalil et al. (2023) confirmed this issue and asserted that ChatGPT is considered poor in terms of judging its correctness. Moreover, the accuracy of the generated information by ChatGPT has been found disappointing and questionable in several different fields, including sports psychology (Szabo, 2023), health care (Han et al., 2023) and mathematics (Frieder et al., 2023).

### **Plagiarism issues:**

There is a concern regarding plagiarism with ChatGPT, as it generates texts that could bypass detected application of plagiarism. For instance, Ventayen (2023) asked ChatGPT for writing an essay intended for publication and then checked its originality by using Turnitin. Surprisingly, the tool identified a low level of similarity between the content and existing

work and no plagiarism was detected. Khalil and Er (2023) similarly asked ChatGPT for writing fifty essays relying on the prompt and questions they provided, half of which were assessed by Turnitin. The results showed average levels of similarity (13.72%). The other essays were assessed by a different plagiarism-detection tool called iThenticate. The results were average (8.76%), meaning that the documents written by ChatGPT were considered original.

#### **Concern regarding exams:**

Susnjak (2022) examined concerns related to the use of ChatGPT during online examinations, highlighting the need of maintaining the integrity of such exams. The study showed that ChatGPT could produce highly original texts with advanced unique reasoning and justification, leading to the concern that students may use it to cheat. The researcher adopted a three-steps methodology for examining ChatGPT's ability to produce evidence of higher-order thinking. Surprisingly, the content it generated was relevant and on topic. Thus, the author suggested using oral exams instead of designing written questions whose answers could be generated by AI programs. Furthermore, he suggested using the most advanced AI detection applications to reduce the possibility of cheating. In general, this study highlighted the importance of addressing the concerns associated with using ChatGPT in education and called for future studies for developing efficient measures for preventing and reducing cheating.

#### **Training programs:**

ChatGPT can be considered a beneficial application for the education sector, but it still can be challenging for instructors and educators who lack skills and knowledge related to machine learning and programming languages. To obtain the most accurate responses from ChatGPT, it is necessary to use the right prompts. Thus, Kovačević (2023) suggested providing academics with the training and resources they need to deal with ChatGPT effectively.

### **Limitation and further studies.**

There are some limitations of the Rapid Review. First, most included articles in the review were conducted in western context. Therefore, the review findings might be based for other contexts. Future review studies may focus on other contexts to compare the findings. Second, this review study focused on the ChatGPT and its uses in education. Thus, other similar AI generative applications were not included. Future review studies may expand their scope and focus on other similar applications and their uses in education. By conducting further in-depth review studies, educators could have a better understanding of the opportunities and challenges of utilizing ChatGPT in education, which leads to develop policies and guidelines for ensuring and gaining the huge benefits of ChatGPT and avoiding or minimizing its concerned issues.

### **Conclusion.**

This study has discussed the benefits associated with using ChatGPT in education, as well as some of the associated concerns and issues. ChatGPT could have significant benefits for the education sector. It can support both instructors and students by generating material and content for courses, providing recommendations and suggestions, and translating text, among other functions. It can help instructors with preparing assessments. Furthermore, students can access information and ask questions 24/7.

However, despite these benefits, some issues must be considered in its application. For example, ChatGPT can produce inaccurate or biased information. Furthermore, there are concerns regarding plagiarism: ChatGPT can generate long and detailed texts within a few minutes, which can bypass plagiarism-detection software with scores that designate them as original. For the same reason, there is a concern that students may use ChatGPT when taking exams. Furthermore, the use of ChatGPT can be challenging for instructors and educators who lack the skills and knowledge they need to use such AI programs effectively. Therefore, there is a need for programs that provide extensive training on such topics.

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