

Impact of ChatGPT on Academic Integrity and Assessment Effectiveness for E-learning in Higher Education: The Need for Redesigning Assessment Practices

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Abstract: In recent years, there has been a growing trend of integrating Artificial Intelligence (AI) into e-learning in higher education. ChatGPT has emerged as one of the most widely utilised AI tools in students' studies. However, the emergence of ChatGPT has contributed to the development of education while simultaneously impacting the integrity of education and the effectiveness of traditional assessment methods. Whether the teacher's teaching goals are achieved or not, whether the students' learning is authentic and effective, and how to ensure the effectiveness of the assessment pose significant challenges to the educator or education sector in the context of artificial intelligence. Therefore, this paper aims to clarify the negative impact of ChatGPT on educational integrity and assessment effectiveness through a systematic literature review. Through the meticulous synthesis and analysis of diverse existing research, this paper finds that several scholars have already clarified the pressing need for redesigning the assessment method within the context of e-learning. However, further research has found that there are several theoretical countermeasures and suggestions for the redesign of assessment methods, but a systematic system of assessment methods has not yet been formed. And there is no reflective analysis of the practice of the redesigned assessment methods. Therefore, this paper will, through a systematic literature review and reflective summarisation of educational assessment practices, aim to investigate effective and responsible assessment methods to mitigate the impact of the rapid development and inappropriate use of ChatGPT on education.

Keywords: ChatGPT, Integrity and Effectiveness, E-learning, Higher Education, Assessment Method.

1. Introduction

The advent of the 21st century has brought about a remarkable transformation in the field of education, primarily driven by the rapid advancement of technology. However, the use of educational technology does not necessarily meet expectations and may even backfire [1]. Therefore, this study was conducted in response to the negative impact of ChatGPT on education. Although Artificial Intelligence (AI) and education have been extensively researched, several scholars have been aware of the possible negative effects of AI on education. Besides, most existing studies remain at the level of describing the current impact of ChatGPT on education, but there is no comprehensive and

systematic method for redesigning assessment methods and ensuring their effectiveness. Moreover, few scholars have also paid attention to the guidelines for the use of ChatGPT issued by universities, but an integrated analysis of the guidelines could also provide reliable countermeasure recommendations for ChatGPT use. Therefore, this paper first clarifies the negative impact of ChatGPT on educational integrity and assessment methods through a literature review. And to prove the inappropriateness of traditional assessment methods and emphasize the urgency and importance of redesigning assessment methods. In addition, there is a comprehensive integration and collation of existing assessment methods and guidelines to obtain a more systematic and scientific assessment method, which guides future ChatGPT assessment redesign and practice. This study can provide valuable insights into the appropriate use of ChatGPT and its potential impact on students' writing skills.

2. Specific Use of ChatGPT in E-learning

Before discussing the specific use of ChatGPT in e-learning, it is necessary to explain its technical principles. The core idea of ChatGPT is to use natural language processing techniques for dialogue generation. These algorithms produce responses that conform to syntactic and semantic rules based on the input content. ChatGPT has four main functions: content generation, intelligent Q&A, cognitive assistance, and emotional companionship [2]. In addition, students can also directly enter the assignment requirements when completing learning tasks requested by their teacher, in this way, they can obtain new compliant texts that have been integrated with the data collection and texts. When taking online tests or tasks, students can quickly access the correct answers or tailored texts through ChatGPT. Essentially, students only need to know how to use ChatGPT effectively to obtain high-quality task texts that meet the teacher's requirements, thereby improving their chances of achieving high grades on the assessment.

3. The Negative Impact of ChatGPT on E-learning in Higher Education

3.1. Impact on Academic Integrity

The Australian government's Tertiary Education Quality and Standards Agency (TEQSA) provides the following definition of academic integrity as "the expectation that teachers, students, researchers and all members of the academic community act with honesty, trust, fairness, respect and responsibility". TEQSA further lists plagiarism, recycling or resubmitting work, fabricating information, collusion, exam cheating, contract cheating and impersonation as examples of academic dishonesty [3]. For in-class assessments like random classroom tests, students can use ChatGPT to obtain answers quickly. For post-lesson learning tasks, students can also receive task text only if entering their requirements into ChatGPT. In such cases, it is clear that this is a form of cheating and academic dishonesty. Therefore, as for the completion of the assignment, there has been much discussion within academics as to whether the assignment generated by ChatGPT should be considered 'plagiarized'. Plagiarism is defined as the act of using someone's work or idea without giving proper credit to the original author. but given that ChatGPT is an artificial intelligence tool without human subjectivity, it is difficult to apply because the work is produced by something rather than someone [4]. However, some scholars suggest that ChatGPT-type software is essentially high-tech plagiarism [5]. It was determined that assignments completed by students using ChatGPT were plagiarized. Moreover, the inability of such AI tools to maintain academic integrity may affect the quality and credibility of academic research. ChatGPT may inadvertently or intentionally generate content or answers that are the same or similar to existing literature [4]. As a result, there is the same risk of plagiarism for students who use ChatGPT-generated text, and students who submit the text as their work may be considered to be colluding, contractually cheating and impersonating. Therefore,

it is clear that there is a significant risk of dishonesty in the use of ChatGPT by students, which can severely damage academic integrity.

3.2. Impact of ChatGPT on Assessments Effectiveness in E-learning Environments

Assessment is the process of evaluating and providing feedback on educational activities, including the learning outcomes of students, the teaching effectiveness of teachers, and the management quality of educational sectors in higher education. The assessments aim to measure and evaluate the extent to which students have achieved the requested 'learning outcomes'[6]. Through various assessment methods, educators can gauge the knowledge, skills, and abilities that students hold, providing valuable feedback to learners and teachers. However, the specific use of ChatGPT in the learning process reveals the student's proficiency with the tool and their ability to accurately summarize the requirements of the task. Students may exploit Chat GPT during online exams or quizzes to seek real-time answers, bypassing the intended evaluation process. This form of cheating can compromise the fairness and accuracy of assessments [7]. Additionally, in an anonymous survey conducted by the Stanford Daily among Stanford students, many admitted to using ChatGPT on their final exams, and it was difficult for professors to sort out exactly which assignments were completed by ChatGPT. Students use ChatGPT to complete learning tasks, and the assignments (tasks) serve as an assessment method, which is meant to assess whether the student has effectively achieved the teacher's instructional goal of mastering a particular skill required. However, the assignment completed by ChatGPT exemplifies its powerful database and data integration capabilities, as well as the student's proficiency in ChatGPT's skills. It can be seen that when students use ChatGPT to complete tests and learning tasks, the meaning of the implementation of the assessment (test, text task) is greatly diminished, and the effectiveness of traditional assessment methods is seen to be impacted. Studies suggest that Generative AI is here to stay and that being so, there is a great need for a shift in assessment methods, from focusing on memorization to application, encouraging critical thinking and problem-solving skills that AI algorithms cannot easily replicate.

4. Redesign of the Assessment Methods

There are two main categories for assessing the assignments completed by students with the help of ChatGPT. First, denying the effectiveness of ChatGPT-generated texts. To avoid the negative impact of ChatGPT (academic integrity and assessment validity issues), reduce or discourage the use of ChatGPT by changing the form or content of the assessment method. Second, recognizing the effectiveness of ChatGPT-generated texts. This method focuses on monitoring students' use of ChatGPT and making various criteria to measure whether texts can be recognized as student assignments. Instead of simply denying the effectiveness of all texts from ChatGPT. The specific assessment methodology is described below.

Considering the assessment types, common take-home assessments including responding to questions, conducting a literature review, writing an argumentative or analytical essay, producing presentation slides, or writing research reports are the most affected methods by ChatGPT [8]. One method to reduce the impact of ChatGPT is to provide more opportunities for collaborative activities by changing the format of assessments. For instance, reducing text-based writing tasks or increasing group discussions, presentations and other interactive activities can discourage or reduce the use of ChatGPT. However, it's clear that with the development of AI, there will be tools like ChatGPT in the future that will make an even bigger impact on educational assessment. Therefore, people need to think about how to utilize AI tools properly to avoid their negative impacts. Instead of eliminating the use of ChatGPT, that would reduce the negative effects of ChatGPT while failing to fulfil its positive effects. Another approach to be used is to design assessments with open-ended questions

where students should develop and defend arguments on their own [9]. Changing the content of the assessment, for example, by designing open-ended questions, like those involving context and the real world might limit the effects of the AI tool on the answers (assignment). This approach makes it more difficult for students to apply the ChatGPT and makes it impossible to rely on the ChatGPT alone to complete their assignments. Therefore, students need to think critically and independently if they want to get the best answer, which to some extent promotes independent learning rather than relying on ChatGPT without thinking. Both approaches ensure the effectiveness of the assessment by preventing or reducing the use of ChatGPT, or by making it more difficult to use ChatGPT. But in essence, these methods do not respond positively to the negative impacts of ChatGPT. Therefore, the method of changing the format or content of the assessment is not assessment redesigning. As technology advances, these two methods will no longer be sufficient to cope with AI tools that are smarter than ChatGPT and will be rapidly eliminated.

Another approach suggests recognizing the use of ChatGPT and allowing students to use AI-generated content as their assignments. Then as to ChatGPT's answers to the assignment questions, appropriate scoring guidelines should be provided to complete the evaluation of student work. For instance, students can be asked to comment about and/or reason out the grade the automated response deserves. Scoring guidelines emphasized the importance of disclosing the use of Generate Artificial Intelligence (GAI) assistance. Students were asked to provide a detailed description of 'which tools were used, how they were used, and how the contents of the GAI were incorporated into the submitted assignment' to be included in an appendix to be submitted with the assignment. Some schools use the content generated by ChatGPT as a source of literature and follow the literature format and include it in the references for the assignment. Some universities indicated how to cite or give credit to content generated by GAI following source citation academic conventions including in-text citation and including the GAI tool in the reference list. For the reference style, half of them recommended students use the standard style [3].

In addition to the classification of the above two kinds of assessment, another approach involves using AI tools to detect whether the text was done through ChatGPT. However, regarding the results of the detection, such as the roles that ChatGPT and the student played and their effects on the completion of that textual content, there is still no specific way to determine the nature of the text based on the results, whether it is plagiarized or reasonable use of the resource by students. Besides, AI tools are incorporated into assessment design, with teachers using ChatGPT to design instructional assessment processes or using ChatGPT to oversee the entire student learning process, which is known as adaptive assessment, is more reflective of a student's growth process and more effective in assessing the quality of student learning. Although, ChatGPT switches from being a provider of educational content to being a participant or even a formulator of education evaluation, is still essentially a generated evaluation text, where there is still inevitable bias and unfairness.

5. Conclusion

This paper focuses on the impact of ChatGPT on academic integrity and the effectiveness of educational assessment methods in the context of ChatGPT use in education. It also provides a systematic integration and analysis of existing assessment methods redesigned to cope with ChatGPT, to provide countermeasure recommendations for future assessment redesign practices. This paper suggests that the 21st-century education system requires a more holistic approach to assessment that goes beyond testing memory and assesses critical thinking, problem-solving, creativity, collaboration, and digital literacy skills. However, when collating and analyzing the literature, this paper found that there were still several schools that redesigned their assessment methods in such a way as to ensure their effectiveness by discouraging or reducing the use of ChatGPT. This approach has not substantially reduced the problems of academic dishonesty and assessment effectiveness that come

with ChatGPT. Therefore, this paper emphasizes the importance and urgency of redesigning assessment methods to meet the rapid development of AI technology. Inevitably this paper still has some limitations. Firstly, although this paper aims to cover a broad range of literature on assessment method redesigning, it still fails to cover all the literature about assessment method redesigning. In addition, this paper primarily focuses on reviewing the literature to obtain a more scientific and effective assessment method, but it remains at the level of theoretical construction of the assessment method. The possible problems of new assessment methods and their effectiveness were not explored in specific assessment practices. As a result, there is a lack of realistic practical evidence to support the assessment method redesigning. Therefore, this paper will focus on assessment effectiveness in assessment practice. The negative effects of ChatGPT will be minimized through continuous assessment practice, reflection on experience, and re-practice to promote the development of educational assessment.

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