Journal of Data Science 24 (1), 254–260
January 2026

DOI: 10.6339/25-JDS1208
Education in Data Science

Addressing the Challenges of AI-Generated Assignment Submissions in Education: Insights and Strategies

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Abstract

The rapid development of artificial intelligence (AI) tools, particularly generative models, has introduced significant challenges in academic assessment. Students increasingly rely on AI to complete assignments, complicating the evaluation of their true understanding and effort. This paper examines the limitations of AI detection tools, the inadequacies of traditional teaching methods in this context, and the potential for responsibly integrating AI into educational practices. Drawing on insights from educators and recent developments in AI, the paper proposes strategies for adapting assessment methods to ensure academic integrity while embracing technological advancements. The findings underscore the need for a balanced approach that leverages AI's benefits while mitigating its risks.

Keywords *academic integrity; AI detection tools; AI in education; student assessment; teaching methods*

1 Introduction

The advent of artificial intelligence (AI) tools, particularly generative models such as ChatGPT, has transformed various sectors, including education. While these tools offer unprecedented opportunities for enhancing learning experiences, they also pose significant challenges, especially in the context of academic assessment. These challenges probe the fundamental goals of education: to foster the development of knowledgeable, critically thinking, creative, and adaptable individuals capable of navigating a complex world. Overreliance on AI without developing underlying competencies risks undermining this goal, potentially hindering the cultivation of essential skills like independent problem-solving, deep conceptual understanding, perseverance, and the discerning use of technology (Riztha et al., 2024). A growing number of students are using AI to complete assignments, such as essays, reports, and programming tasks, raising concerns about the authenticity of their work and the ability of educators to evaluate their true understanding and effort.

The use of AI in education is not a new phenomenon, but the sophistication of modern generative models has amplified the issue. Artificial intelligence, particularly tools like ChatGPT and GitHub Copilot, can produce human-like text, solve complex problems, and generate code, making them attractive to students for tasks ranging from drafting essays to debugging code. However, this adoption has created a dilemma for educators in distinguishing between student-generated work and AI-assisted outputs, a challenge with significant implications for academic integrity (Cotton et al., 2024). The core challenge lies with AI-generated assignment submissions.

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Received October 12, 2025; Accepted November 9, 2025

When students rely on AI, the final product may appear polished, yet it may not represent their actual capabilities. This disconnect complicates the educator's role in evaluation and necessitates a reevaluation of what constitutes learning (Evangelista, 2025).

In response, AI detection tools were developed, but they are far from infallible. OpenAI's own detector was discontinued due to its limited accuracy. These tools typically use probabilistic models that are prone to high rates of false positives (incorrectly flagging human work as AI-generated, especially from non-native English speakers) and false negatives (failing to detect sophisticated AI content) (Xie et al., 2023). Such errors can lead to unjust penalties and undermine the focus on the originality and depth of a student's thought, which are the core objectives of academic work (Luo, 2024).

This paper explores the complexities introduced by AI-generated assignments and the ensuing challenges faced by educators. Specifically, it addresses the following key issues:

1. The limitations of AI detection tools in identifying AI-generated content.
2. The shortcomings of traditional teaching and assessment methods in the age of AI.
3. The potential for responsibly integrating AI into educational practices.

The purpose of this paper is not to advocate for the prohibition of AI in education but to propose strategies that ensure academic integrity while harnessing the benefits of technological advancements. By examining the experiences of educators and recent developments in AI, this paper aims to provide a nuanced perspective on how to adapt teaching and assessment methods to meet the demands of the modern educational environment. Central to this adaptation is the principle that guidelines for AI use must be tailored to specific pedagogical goals. Educators must first define what students are intended to learn or demonstrate in an assignment (e.g., foundational knowledge acquisition, critical analysis, creative synthesis, procedural efficiency) before determining the extent and manner in which AI tools may be appropriately used (Slade et al., 2025).

2 Analysis

Traditional teaching methods, particularly those that rely heavily on written assignments or closed-book exams, are increasingly insufficient in the age of AI. As educational philosopher John Dewey noted, "If we teach today's students as we taught yesterday's, we rob them of tomorrow." This is especially true in technical fields; for instance, requiring students to write code manually while the professional world embraces AI-assisted development seems outdated. For over a decade, students have utilized resources like Stack Exchange, library documentation, and search engines to find solutions or near-solutions. This practice is often encouraged, as the crucial skill lies in applying that information to a specific task. Modern AI tools, however, can unfortunately remove this critical application step, which is where student learning was meant to occur. Similarly, in theoretical courses, assessment methods heavily reliant on rote memorization and regurgitation of information—long considered pedagogically limited—become particularly untenable. The widespread availability of AI tools, which can easily generate such content, further challenges the validity of evaluating student understanding through these means (Rane et al., 2024b). Consequently, if AI makes the initial stages of an assignment trivial, the assignment itself must be redesigned to expect more from the student, pushing them further.

Rather than resisting the integration of AI, educators should consider how to incorporate it responsibly into the learning process. AI can serve as a powerful tool for enhancing student engagement and facilitating deeper understanding, provided it is used in a way that emphasizes

critical thinking and creativity. For instance, students can be encouraged to use AI to generate initial drafts or solutions, but they must then critically evaluate, refine, and improve upon these outputs (Malik et al., 2023). This collaborative approach not only leverages AI's capabilities but also ensures that students remain actively involved in the learning process, fostering skills that are essential in a technology-driven world (Delello et al., 2025). However, integrating AI into education requires careful consideration of how to assess student work in this context. Traditional assessment methods, such as grading a final written report, are no longer sufficient, as they do not capture the student's interaction with AI or their ability to think critically about the generated content. Instead, educators must develop new strategies that focus on the process of learning rather than just the final product (Furze et al., 2024).

A concerning trend in some educational settings is the reliance on AI to both generate and evaluate student work, a phenomenon referred to as "Counter-magic." In this scenario, students use AI to complete assignments, and educators use AI to grade them, leading to a situation where neither party is fully engaged in the teaching and learning process. This approach is problematic because it reduces education to a transactional exchange between machines, devoid of human judgment and critical thinking. Such practices not only undermine the educational mission but also fail to prepare students for real-world challenges where human oversight and ethical considerations are paramount (Shishavan, 2024).

3 Proposed Strategies

To address the challenges posed by AI-Generated Assignment Submissions, educators must adopt innovative assessment methods that emphasize student engagement, critical thinking, and the responsible use of technology. The suitability of each method, and the accompanying policy on AI use, should be determined by the primary learning objective of the specific assignment. The following strategies are proposed:

Incorporating Oral Examinations and Presentations. One effective way to assess student understanding is through oral examinations or presentations, where students are required to explain their work in real-time. This method allows educators to probe the depth of a student's knowledge, asking targeted questions that reveal whether the student has genuinely engaged with the material or merely relied on AI. For example, in a programming course, students could be asked to explain their code, justify their design choices, and troubleshoot errors on the spot, with the focus on assessing how they critically evaluate all sources—whether documents, communities, or AI—to solve problems. Meanwhile, in theoretical courses, students could be required to defend their arguments or analyses in front of their peers and instructors. Oral examinations also provide an opportunity to assess soft skills, such as communication and critical thinking, which are increasingly important in the modern workforce. Moreover, this approach reduces the likelihood of academic dishonesty, as it is difficult for students to feign understanding in a live setting. Grounded in authentic assessment principles, this strategy ensures students can apply knowledge in real-world contexts (Kurtz et al., 2024; Ozguven et al., 2024).

Requiring Process Documentation. Another strategy is to require students to document their interaction with AI throughout the assignment process. Rather than submitting only the final product, students would be asked to provide a detailed account of how they used AI. This includes submitting the prompts used, the AI's responses, and their subsequent revisions. This documentation serves as evidence of the student's engagement with the material and their ability to critically evaluate AI-generated content. For instance, in a writing assignment, a stu-

dent could present a series of drafts with explanations on how they refined the AI's output to enhance clarity, coherence, or originality. Similarly, in a programming task, they could document how they modified and optimized AI-generated code to meet specific project requirements or improve performance, thereby showcasing their own analytical and problem-solving skills. By assessing both the process and the final product, educators can gain a more comprehensive understanding of the student's learning journey. This aligns with the process-product assessment framework, emphasizing transparency and accountability (Awadallah Alkouk and Khlaif, 2024; Furze et al., 2024). This approach is particularly valuable for assignments where the learning objective includes understanding how to leverage tools like AI effectively and ethically in a workflow, rather than solely assessing unaided content generation.

Designing Open-Ended, Creative Questions. Crafting assignments that demand personal reflection, creativity, and context-specific knowledge can make it challenging for AI to produce meaningful responses. For example, a history assignment might ask students to imagine themselves as a historical figure and write a diary entry, incorporating specific events and cultural context. Such tasks require creativity and critical thinking—areas where AI tools like ChatGPT often fall short (Evangelista, 2025). This strategy, rooted in constructivist pedagogy, encourages active learning and the construction of knowledge through personal experiences (Maciel, 2024; Rane et al., 2024b).

Leveraging AI for Assessment Support. While AI should not replace human judgment in assessment, it can be used to support educators in managing the increased workload associated with these new methods. For example, AI can be employed to analyze student submissions to identify patterns or highlight areas requiring further scrutiny. During oral examinations, AI tools can transcribe and summarize student responses, freeing educators to focus on evaluating the substance of the answers rather than on detailed note-taking. Furthermore, AI can assist in generating personalized feedback tailored to individual student performance and identified weaknesses. However, educators must retain ultimate responsibility for assessment, using AI as a tool to enhance their expertise rather than replace it. Advanced tools like GPTZero or Turnitin's AI-detection features can complement these efforts by flagging potential AI-generated content for review (Xie et al., 2023; Luo, 2024).

Promoting AI Literacy and Ethical Use. Educating students and faculty about the ethical use of AI tools can foster a culture of responsibility and integrity. This includes teaching students to use AI as a learning aid rather than a shortcut, emphasizing the critical distinction between leveraging AI ethically within assignment guidelines and committing academic misconduct by misrepresenting AI-generated content as their own original work. Incorporating AI ethics into the curriculum through workshops or discussions helps students develop a moral framework for using these tools responsibly (Amato and Schoettle, 2023). While understanding ethical implications does not guarantee compliance, it aims to make students more mindful and likely to use AI appropriately, aligning with principles of digital literacy and ethical education (Meng and Xu, 2025; Cotton et al., 2024).

Encouraging Human-AI Collaboration. Allowing students to use AI as a collaborative tool where they generate ideas or drafts with AI and then refine them can enhance learning while maintaining academic integrity. For example, in a creative writing class, students might use AI to brainstorm story outlines but must develop the narrative themselves. This approach, supported by collaborative learning principles, ensures students critically evaluate and improve AI outputs, preparing them for real-world scenarios where AI is a partner, not a replacement (Malik et al., 2023; Delello et al., 2025). The proposed strategies, while effective, undoubtedly increase the workload for educators. To mitigate this burden, institutions must provide ade-

quate support. This includes training and resources on integrating AI into teaching and assessment (Bobula, 2024), technological support through AI-powered tools for administrative tasks (Shishavan, 2024), and collaborative assessment models like peer or group-based evaluations to distribute the workload and foster a collaborative learning environment (Oh and Sanfilippo, 2024).

4 Conclusion

The advent of AI in education presents both opportunities and challenges. While AI tools can enhance learning and streamline certain tasks, their misuse in assignments threatens the integrity of academic assessment and, more fundamentally, risks impeding the development of core human competencies necessary for students to become capable, functional individuals. Traditional methods of evaluation are no longer sufficient, and educators must adapt by embracing new strategies that emphasize critical thinking, process documentation, oral examinations, and the responsible use of AI as a tool, not a crutch. Further research could explore novel pedagogical strategies to foster deeper understanding and critical engagement with these challenges. Such strategies might include providing students with intentionally flawed AI-generated solutions to hone their critical evaluation and debugging skills, or designing projects that require them to investigate AI's potential to circumvent learning objectives—an approach analogous to 'academic integrity bug bounties' (Rane et al., 2024a).

At the same time, it is essential to recognize that AI is here to stay, and its integration into education is inevitable. Rather than resisting this change, educators should focus on defining pedagogical goals clearly—aiming to cultivate not just subject matter expertise but also enduring skills like critical analysis, creativity, ethical reasoning, and adaptability—and then determining how AI can responsibly support, rather than subvert, those goals. This involves teaching students how to use AI ethically and effectively, ensuring that they develop not only AI proficiency but also the underlying intellectual foundations necessary to thrive. By doing so, we can prepare students not only for academic success but also for the demands of the modern workforce. It is incumbent upon educators to evolve with the times, embracing the opportunities presented by AI while vigilantly safeguarding the core values and fundamental objectives of education—fostering genuine human learning and capability.

Disclosure of AI Usage

During the preparation of this work the author(s) used AI-powered tools (such as language models) for drafting assistance, grammar checking, and literature searching. The author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the published article.

Supplementary Material

To provide practical examples of the strategies proposed in this paper, this study offers the instructional designs and assessment tools from the "Information System Development Methods and Tools" course, taught by the author. These materials demonstrate how to guide students in using AI responsibly and how to conduct in-depth evaluations of their learning processes (e.g., through process documentation and oral assessments) within an authentic teaching

environment. All materials have been anonymized to protect student privacy.All supplementary materials are available in the following public repository: https://github.com/Xu107-hhh/JDS1208-Supplementary-Material.git.

Funding

This study was supported by the National Social Science Fund of China (Grant No. 24BTQ045).

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