

“CheatGPT” vs “TeachGPT”: a quantitative analysis of ChatGPT and generative AI’s role in academic assessment design and student performances

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The emergence and integration of AI tools like ChatGPT into educational contexts has ignited heated debates, especially concerning its dual role as both a powerful teaching assistant and a potential tool for dishonesty. On one side, it may hold potential as a pedagogical aid for instructors and as a source of efficiency for students (one may nickname it positively as “TeachGPT”). On the other side, it may trigger lazy adoption by teachers to prepare thoughtless assessments, and unfair use by students to complete assignments or circumvent academic integrity in examinations (one may nickname it as “CheatGPT”). This study seeks to navigate this dichotomy by examining the impact of ChatGPT on assessment design and student outcomes in 3 university courses (Software and computing for subnuclear physics, Applied machine learning, Quantum machine learning) where the author has been serving as instructor since many years and has collected a vast dataset of questions and scores. Based on a relatively large database of questions created by the instructor, from which multiple-choice tests can be generated and administered to students, the assessment experience collected over the years with real students has been recently complemented with fake exam results generated by collecting ChatGPT answers to the very same questions, thus simulating dozens of “fake” academic years and related assessments. The performance comparison among real students and ChatGPT-based fake students reveals intriguing quantitative patterns, shedding light on 1) how AI matches or diverges from human responses across various scenarios; 2) the implications on future exam design, mainly focusing on strategies to mitigate AI misuse while leveraging its strengths for improved learning outcomes; 3) the feasibility of designing “ChatGPT-proof” tests, where the AI itself contributes to the creation of assessments resistant to its own capabilities. The study highlights the transformative potential of generative AI in reshaping educational practices and redefining the boundaries of teaching and evaluation.

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