Pedagogical Implications of ChatGPT on Accounting Assessment in Higher Education

Hannah Wong[1], Valeriya Avdeev[2], Sia Nassiripour[3]
William Paterson University, Cotsakos College of Business,
Department of Accounting and Law,
Wayne, New Jersey, the United States

Abstract
This paper investigates the potential role that artificial intelligence could play in higher education in accounting. ChatGPT was used to generate answers to homework assignments and tests used to measure student performance in an intermediate accounting course, which was part of an online MBA program at a four-year public university in the United States. The results were compared to those obtained by students in a recent section of the course. Our findings suggested that ChatGPT could contribute positively to student learning as a complementary assistive tool. However, it also presents challenges to instructors in ensuring academic integrity among students. It is recommended that accounting educators keep abreast of the rapid advancements in this chatbot technology so as to assure effectiveness and relevance of their instruction and student assessment.

Keywords: ChatGPT, artificial intelligence, higher education, intermediate accounting, student assessment, academic integrity

1. Introduction

Artificial intelligence (AI) refers to the field of computer science where machines are apparently capable of performing tasks that require a high level of intellectual analyses, which were traditionally believed to be that only human beings could do. This field has undergone fast progress in recent years. Computer systems now can generalize or summarize vast amounts of data or past events. They can engage in reasoning, problem solving, even decision making. Artificial intelligence has revolutionized society in many ways. In customer service, chatbots can provide information for most customers' inquiries when they seek assistance through on-screen live chats. In finance, stock price changes are monitored in real time and stock trading strategies can be executed instantly when pre-determined criteria are met. In healthcare, a patient's consultation with a doctor can be video- or audio- taped and transcribed for documentation, saving the medical staff time for writing up patient medical records and improving accuracy.

ChatGPT, the chatbot developed by OpenAI, exhibited phenomenal growth since its launch in November 2022. Ahmed (2025) reported that the number of active weekly users of ChatGPT

totaled 50 million in January 2023, 100 million in August 2023, 250 million in October 2024, 300 million in December 2024, and 400 million in February 2025. Then, in just a few weeks, its weekly users doubled to 800 million in March 2025. By July 2025, it had 180 million daily visitors and handled over 1 billion queries every day. ChatGPT was so popular that it had become a household name.

The popularity of artificial intelligence, especially ChatGPT, could be a double-edged sword. On the one hand, it could serve as valuable research support for students. Student literally have access to such powerful AI assistance 24/7, where they could look up any information instantly using the chatbot. On the other hand, not all information provided by the chatbot can be trusted. Students often do not have the ability to distinguish correct replies from wrong ones. The use of ChatGPT also raises uneasiness about students' ethics in their college work. A student could arguably have AI write a term paper on their behalf or complete their homework assignments or examinations for them. It might be difficult for college instructors to discover such dishonest behavior. It is critical that they keep track of the fast changes in this technology and understand the benefits, limitations, and methods of incorporating AI technologies, such as ChatGPT, to complement traditional instructional methods.

The purpose of this study is to examine the role of artificial intelligence in accounting education. We conducted an empirical investigation of how well ChatGPT would fare in the student assessments in an intermediate accounting course. Intermediate accounting is the pivotal course for accounting majors. It captures the analytical skills that are necessary for students to succeed in their studies and future career. It is not surprising that this course has been the interest of studies by researchers such as Wilson (2025) regarding accounting education.

The rest of this paper is organized as follows. Section 2 reviews the growth of AI technology in general, and ChatGPT in particular. Section 3 summarizes prior research on AI in college courses and academic integrity. Our methodology and findings are presented and discussed in Section 4. Lastly, concluding remarks are given in Section 5.

2. Developments of Artificial Intelligence and ChatGPT

The earliest artificial intelligence programs in the business field focused on the use of algorithms on well-organized, structural datasets to perform analytical tasks. Individual stock prices are constantly monitored. Stock trading strategies are pre-determined and instantly executed by the machine when needed. Accounting firms conduct continuous audits on corporate clients, where company records and transactions are continuously screened for patterns indicative of possible frauds or irregularities. Logistics are planned and monitored to facilitate merchandise shipments to customers.

Over time, improvements in processing capabilities and big data storage facilities enabled the innovation of Large Language Models (LLM), machine learning models that are capable of generating natural language. This led to the invention of chatbots, including ChatGPT. ChatGPT, using advanced machine learning and the Generative Pre-trained Transformers (GPT)

technology, could interact with its users in ways that resemble human conversations. Its predecessors, GPT-1, GPT-2 and GPT-3 were created from 2018 to 2020. ChatGPT was first launched in November 2022. Its latest version, ChatGPT-4, came out in 2023.

ChatGPT was embraced by technology enthusiasts instantly. Upon its launch in November 2022, it reached 1 million users within just five days. By July 2025, it had 800 million weekly active users worldwide (Singh 2025), 180 million daily visitors, and handled over 1 billion queries every day (Ahmed 2025). 92% of Fortune 500 companies are using their products (Revankar 2025).

3. Literature Review

Researchers have examined how the invention of ChatGPT affected college education. Gill et al. (2024) concluded that ChatGPT had positive impacts, including facilitating student learning and helping educators develop course content. However, such contents were not always reliable. ChatGPT responses could contain wrong information. This problem could be exacerbated by ChatGPT's web browsing functionality. This feature enables ChatGPT to fetch current information from the internet, which could be erroneous. Plagiarism was another possible problem, as plagiarism detection programs might not be able to recognize that ChatGPT's human-language-like answers were actually information copied from other sources.

Mogavi et al., (2024) examined how most college instructors used ChatGPT. They found that users typically used ChatGPT in content creation, such as writing, proofreading and preparing lecture materials. The early adaptors were in Social Sciences, Business and Management and STEM fields.

Other researchers looked into the incorporation of ChatGPT in specific courses and its impact on student experience. Marquadson (2024) looked at the use of ChatGPT in an assignment within a cybersecurity course. Students were instructed to use ChatGPT to help them develop and implement a plan to self-study a topic of their choice. Students generally found using ChatGPT to be a positive aid - It was informative and easy to use.

Ding et al. (2023) used ChatGPT in a physics course as a virtual tutor for students taking a test. They found that students tended to have adopted varying degrees of trust in ChatGPT even before having any experience with the chatbot. The "trust group" agreed with all ChatGPT's answers indiscriminately. The "partial trust" group partially agreed with the replies. The "distrust group" disagreed with the responses unconditionally. They suggested that it's important to teach students to critically evaluate the information provided by this new technology.

Tossell et al. (2024) collected students' feedback after students were instructed to use ChatGPT in writing an essay. Student reactions were mixed. They found ChatGPT to be a functional apparatus for research. However, they expressed doubts about its accuracy and reliability. They would like instructors to use ChatGPT to assist in grading their work, but they did not trust the

grading to be done solely by ChatGPT. In short, the students saw ChatGPT as a fruitful collaborative resource which requires human oversight.

Hsin (2024) looked at student use of ChatGPT in a computer networking course. Students highly appreciated ChatGPT as a convenient means that enabled them to understand networking concepts. Objective student performance measures also improved over prior sections of the same course where ChatGPT was not used.

Albayati (2024) used the Technology Acceptance Model (TAM) in information systems research to explore factors that affect students' intention to use ChatGPT. They extended the model with proxies for perceived ease of use, perceived usefulness, privacy, security, social influence and trust. All were found to be important factors that influenced students' acceptance of ChatGPT as a study assistance software. Generally, prior research indicated a highly positive attitude towards ChatGPT. Students tended to deem it a valuable learning aid that was easy to use.

However, other researchers expressed apprehension about the possibility of using ChatGPT to cheat. Faja, S. et al. (2024) pointed out that instructors were in uncharted territory in their effort to detect unethical work submitted by their students. The responses of ChatGPT are so similar to human language that it is hard to recognize an AI reply from an organic answer written by a student.

Becker et al. (2023) pointed out that artificial intelligence could enhance efficiency in programming courses but could lead to moral concerns. Faculty might need to revise how they evaluate student performance since ChatGPT could perform significant tasks in programming, reducing the effectiveness of traditional methods.

College courses were traditionally conducted in person in the classroom. Before 2020, online courses used to comprise only a small fraction of college courses, if any. At the inception of the pandemic, in-person instructions in the vast majority of colleges were switched to virtual mode practically overnight. This exposure to remote classes made educators and students more comfortable with distant instruction. Technological progress in recent years has also led to improvements in virtual classroom management systems such as Blackboard and Canvas. The popularity of meeting platforms such as Zoom made remote participation possible and well accepted. The cultural shift of distance instruction replacing in-person instruction led to the proliferation of remote courses. According to National Center of Education Statistics, 73 universities in the United States offered 4-year or 2-year online degrees by July 2025. More than 562,659 students were enrolled in virtual schools across the United States. Bestcolleges.com reported that in 2022, 10.1 million college students (54%) took at least one class remotely, 4.9 million of which (26%) took web-based college classes exclusively. 4.5% of colleges offered courses primarily online. And 1.1 million students (6.1%) attend these fully virtual colleges.

The electronic delivery of college courses presents unique problems for educators. Not only do they have to modify their course materials from the live instruction format, but they might also

need to reconsider the way they measure student performance in order to assure academic integrity. Previous studies were inconclusive. Kidwell and Kent (2008) found that distance-learning students were less likely to engage in academic misconduct than face-to-face students. In contrast, Golden & Kohlbeck (2020) found that immoral actions were common among students taking online tests in an auditing course. Some instructors tried to alleviate this problem by proctoring their web-based examinations (Reisenwitz, 2020), while others argued against it (Dadashzadeh, 2021).

The goal of this paper is to examine how well ChatGPT would do in student assessments in a remote intermediate accounting course. Intermediate accounting is a pivotal course in the accounting curriculum. It requires and develops critical thinking skills that one needs to excel in the accounting field. Examining the extent to which ChatGPT could respond to homework or quiz questions accurately will provide insights for accounting educators on the benefits of ChatGPT as an assistive technology for student support as well as its risk as a cheating tool.

4. Methodology and Findings

Our sample consisted of a complete set of homework assignments and quizzes of a recent intermediate accounting course of an online MBA program at a four-year state university in Northeastern United States. A graduate course was chosen because typically intermediate accounting is covered over two semesters in undergraduate programs. Hence, only half of the intermediate accounting materials would be included in a single undergraduate intermediate accounting course. The goal of our paper is to provide a complete picture of the intermediate accounting curriculum. Therefore, a graduate course provides a better way to achieve our objectives. It should be pointed out that the characteristics of graduate students could be different from those of undergraduate students. Therefore, while the observations in this paper might provide useful insights into undergraduate education, such extrapolation should be applied with a caveat.

The term was seven weeks long, which was the regular term length of the MBA programs. The homework assignments and quizzes were delivered to students by the publisher's digital platform via a learning management system that enabled the randomization of questions and answers, individualized numerical values, as well as restrictions on how long students could access the tests.

There were homework assignments on fifteen chapters, each carrying the same weight in overall course grade. They contained only open-ended problems which involved extensive calculations. Most problems consisted of multiple parts. To solve those problems, students needed to have a thorough understanding of the accounting rules, analyze the case at hand to identify the appropriate rules to be applied, and formulate the necessary accounting treatment and computations for that specific case. Students were allowed two attempts on each homework problem.

Table 1 shows the topics of the homework problems and quizzes. These student assessments covered a comprehensive collection of essential topics that students were expected to acquire from their intermediate accounting course.

Table 1: List of Topics in Homework Assignments and Quizzes in Intermediate Accounting

1. The Accounting Information System	8. Current Liabilities and Contingencies
1.1 Analyze and Record Business Transactions	*8.1 Current Liabilities*
1.2 Adjusting Entries	*8.2 Contingencies*
2. Receivables	9. Long-Term Liabilities
2.1 Recognition of Receivables	*9.1 Bonds Payable*
2.1 Valuation of Accounts Receivable	*9.2 Extinguishment of Debt*
2.3 Other Issues	*9.3 Long-Term Notes Payable*
	9.4 Reporting and Analyzing Liabilities
3. Basic Valuation of Inventories	
3.1 Goods and Costs To be Included in Inventory	10. Stockholders' Equity
3.2 Cost Flow Assumptions	*10.1 Corporate Capital Issues*
3.3 Special Issues Related to LIFO	*10.2 Treasury Stock*
3.4 Effects of Inventory Errors	*10.3 Dividend Policy*
4. Advanced Inventory Valuation Issues	11. Dilutive Securities and Earnings per Share
4.1 Lower-Of-Cost-Or-Net Realizable Value	*11.1 Stock Warrants*
4.2 The Gross Profit Method of Estimating Inventory	*11.2 Basic Earnings per Share*
4.3 Presentation of Inventories and Decision Analysis	*11.3 Diluted Earnings per Share*
5. Acquisition and Disposition of Property, Plant, and Equipment	12. Investments
	12.1 Investments in Debt Securities
5.1 Interest Costs During Construction	*12.2 Investments in Equity Securities*
5.2 Valuation of Property, Plant, and Equipment	*12.3 Other Reporting Issues*
5.3 Exchanges of Property, Plant, and Equipment	
5.3 Costs Subsequent to Acquisition	13. Revenue Recognition
5.4 Disposition of Property, Plant, and Equipment	*13.1 The Five-Step Process*
	13.2 Revenue Recognition Issues
6. Depreciation, Impairments, and Depletion	
6.1 Depreciation	14. Accounting Changes and Error Analysis
6.2 Impairments	*14.1 Accounting Changes*
6.3 Depletion	*14.2 Other Accounting Changes*
	14.3 Accounting Errors
7. Intangible Assets	
7.1 Intangible Asset Issues	15. Statement of Cash Flows
7.2 Goodwill	*15.1 Preparing the Statement of Cash Flows*
7.3 Research and Development Costs	*15.2 Direct Method*

Table 2 shows descriptive statistics of the student scores obtained in each assignment. The average score that students received in individual assignments ranged from 83 to 98, with a mean of 91.73 (out of a maximum of 100). The minimum score ranged from 25 to 85, averaging 65.37. The maximum score was 100. Such high scores could be because graduate programs in accounting tend to attract many mature high achievers who intend to pass the CPA examinations and become licensed accountants. Many of them have had extensive work experience in the field and might even have taken similar courses before entering their graduate program.

Table 2: Descriptive Statistics of Student Scores Obtained in Homework Assignments			
Chapter	Average Score	Minimum Score	Maximum Score
The Accounting Cycle	98	85	100
Cash and Receivables	90	60	100
Basic Valuation of Inventories	85	44	100
Advanced Topics in Inventory Valuation	98	84	100
Acquisition and Disposal of Property, Plant, and Equipment	88	61	100
Depreciation, Depletion and Impairments	90	63	100
Intangible Assets	95	82	100
Current Liabilities and Contingencies	92	69	100
Long-Term Liabilities	92	79	100
Changes in Stockholders' Equity	96	85	100
Earnings per Share and Dilutive Securities	83	25	100
Investments	94	73	100
Revenue Recognition Issues	98	63	100
Accounting Changes and Error	86	42	100
Statement of Cash Flows	91	66	100
Mean	91.73	65.37	100

Table 3 presents statistics of the time that students spent on each homework assignment. On average, students spent 1 hour 24 minutes on one assignment. The average minimum time spent was 23 minutes. The mean maximum time was 4 hours and 22 minutes. The wide range of time spent could be due to the wide range in student academic background, work experience and study habits. Students who had taken a similar course in their previous studies, worked in jobs in related fields, or thoroughly reviewed the course materials before starting to do their homework problems, would need to spend much less time than their counterparts. Another possible factor was the significant variation in the amount and complicity of materials from chapter to chapter. Students spent an average of thirty-five minutes completing the problems on revenue recognition issues. On the other hand, it took them an average of three hours and eighteen minutes to finish the problems for the chapter on the acquisition and disposal of property, plant and equipment.

Table 3: Descriptive Statistics of Time Spent on Homework Assignments						
Chapter	Average		Minimum		Maximum	
	Hours	Minutes	Hours	Minutes	Hours	Minutes
The Accounting Cycle	0	48	0	7	2	43
Cash and Receivables	0	41	0	10	2	56
Basic Valuation of Inventories	1	17	0	9	4	7
Advanced Topics in Inventory Valuation	0	48	0	5	3	21
Acquisition & Disposal of Property, Plant, and Equipment	3	18	0	37	9	13
Depreciation, Depletion and Impairments	1	27	0	16	4	16
Intangible Assets	1	2	0	9	3	23
Current Liabilities and Contingencies	1	33	0	16	3	8
Long-Term Liabilities	2	9	0	28	5	19
Changes in Stockholders' Equity	2	3	0	25	7	16
Earnings per Share and Dilutive Securities	1	11	0	10	4	0
Investments	1	8	0	20	4	50
Revenue Recognition Issues	0	35	0	5	1	49
Accounting Changes and Error	1	29	0	18	4	31
Statement of Cash Flows	1	33	0	18	4	40
Mean	1	24	0	23	4	22

Moreover, seven quizzes or mini examinations were given in the course, with each quiz covering two to three chapters in the textbook, with the exception of the cashflow statement chapter where the quiz was on that single chapter. Questions in each quiz were fairly evenly distributed among the tested chapters. Each quiz consisted of fifteen multiple choice questions that required critical thinking. The majority of them were computational problems. Each quiz had a sixty-minute time limit, were open book and were not proctored.

Table 4 presents the distribution of scores and time spent on each quiz. The average score in each quiz ranged from 79 to 89, with a mean of 85.86 (out of 100). The minimum score for each quiz varied between 33.35 and 60, while the average was 46.67. The maximum score obtained in all quizzes was 100. Students typically spent 33 minutes on a quiz. The minimum time spent on a quiz averaged 8 minutes. The maximum time averaged 58 minutes. The students' performances were found to be quite satisfactory, possibly reflecting the fact that graduate students tended to be motivated high achievers.

Table 4: Descriptive Statistics of Student Scores and Time Spent in Quizzes						
Chapter Coverage	Scores			Time Spent (Minutes)		
	Average	Minimum	Maximum	Average	Minimum	Maximum
Quiz 1 The Accounting Cycle Cash and Receivables Basic Valuation of Inventories	79	33	100	40	13	60
Quiz 2 Advanced Topics in Inventory Valuation Acquisition and Disposal of Property, Plant, and Equipment	89	60	100	31	6	60
Quiz 3 Depreciation, Depletion and Impairments Intangible Assets	88	60	100	35	10	59
Quiz 4 Current Liabilities and Contingencies Long-Term Liabilities	89	89	89	89	89	89
Quiz 5 Changes in Stockholders' Equity Earnings per Share and Dilutive Securities	84	53	100	38	11	57
Quiz 6 Investments Revenue Recognition Issues Accounting Changes and Error	84	33	100	27	6	54
Quiz 7 Statement of Cash Flows	88	40	100	30	7	58
Mean	91.73	55.95	98.17	91.73	21.50	62.83

Furthermore, each homework or quiz problem was entered into ChatGPT (version GPT4o), and the generated answers were reviewed for their correctness. Table 5 presents the performance of

ChatGPT in solving the homework problems. Each homework problem was copied verbatim from the publisher online platform to the search-query box of ChatGPT without any revision. No additional information, clarifications or follow-up queries were entered into the AI chatbot. This interaction mimicked the process in which students completed their homework problems: They were given the homework problems and were expected to provide their answers without any further information from the instructor. Then the ChatGPT generated responses were compared with the model answers provided by the publisher platform to determine their correctness. In nine of the fifteen assignments, ChatGPT came up with erroneous replies for 5% to 30% of the open-ended problems, averaging 20.26%. Accuracy rate across all assignments was 87.84%, slightly lower than the average student homework score of 91.73%.

Table 5: Scores of ChatGPT Generated Answers in Homework Assignments	
Chapter	Score
The Accounting Cycle	100
Cash and Receivables	83
Basic Valuation of Inventories	85
Advanced Topics in Inventory Valuation	100
Acquisition and Disposal of Property, Plant, and Equipment	75
Depreciation, Depletion and Impairments	95
Intangible Assets	100
Current Liabilities and Contingencies	70
Long-Term Liabilities	100
Changes in Stockholders' Equity	100
Earnings per Share and Dilutive Securities	88
Investments	80
Revenue Recognition Issues	72
Accounting Changes and Error	70
Statement of Cash Flows	100
Mean	87.84

Table 6 presented the scores that the ChatGPT received in each quiz. The chatbot gave the correct answers for all fifteen questions in one of the seven quizzes, fourteen questions in five quizzes, and thirteen questions in one quiz. The AI mean quiz score was 93.33, higher than the mean quiz score 85.86 obtained by students in the course.

Table 6: Scores of ChatGPT Generated Answers in Quizzes		
	Chapter Coverage	Score
Quiz 1	The Accounting Cycle Cash and Receivables Basic Valuation of Inventories	93.33
Quiz 2	Advanced Topics in Inventory Valuation Acquisition and Disposal of Property, Plant, and Equipment	93.33
Quiz 3	Depreciation, Depletion and Impairments Intangible Assets	100.00
Quiz 4	Current Liabilities and Contingencies Long-Term Liabilities	93.33
Quiz 5	Changes in Stockholders' Equity Earnings per Share and Dilutive Securities	93.33
Quiz 6	Investments Revenue Recognition Issues Accounting Changes and Error	93.33
Quiz 7	Statement of Cash Flows	86.67
Mean		93.33

The data showed that ChatGPT did not perform as well as students in the homework assignments, which consisted of open-ended problems exclusively. In contrast, it outperformed its human counterparts in the quizzes which comprised of multiple-choice questions only. Nevertheless, ChatGPT successfully scored over 87% even in the open-ended problems in a college course that most accounting students find challenging. The results illustrated the power of ChatGPT in generating dependable information even in the professional field of accounting. This provides assurance that it could be a useful and convenient study aid for students. However, students should check with their instructors to ascertain the accuracy of the information supplied by AI. Also, ChatGPT cannot teach students advanced intellectual activities such as critical thinking, nor can it enable students to acquire a deep understanding of the subject matter, for example, reasons and logics behind the accounting rules, their historical background, and the

compromise among various interest groups. Instructors play an indispensable role in accounting education.

These results also provided valuable information for educators to gauge the risk of students using ChatGPT to cheat. Since 1990, various studies by the International Center of Academic Integrity consistently found that over 60% of university students admitted engaging in dishonest behavior in their course work in some way, of which more than 30% admitted cheating on an examination. Detecting unethical students work, especially in virtual examinations, becomes increasingly difficult. Our investigation provides empirical evidence on the use of ChatGPT in the assessment of intermediate accounting students. With its ability to score over 87% on homework assignments and quizzes, ChatGPT creates a challenge for many instructors. It might be beneficial to require remote proctoring. Hartley et al. (2025) suggested that monitoring web-based tests could be an effective deterrent. Golden et al. (2020) found that paraphrasing text bank problems in examinations could impede tech-savvy students' ability to find the answers on the internet, thereby reducing unscrupulous conducts. It is imperative that educators stay current of the development in AI technology and take them into account when designing their course.

5. Conclusion

We investigated the performance of students versus ChatGPT in an intermediate accounting course. Compared to their human counterparts, ChatGPT fared slightly better in the mechanical, straight forward multiple-choice quiz questions, but marginally worse in the open-ended homework problems. ChatGPT, with its ability to provide accurate information over 87% of the time, could serve as valuable support for students. On the other hand, the findings demonstrate its latent risk as a cheating device. The phenomenal progress in artificial intelligence presents unprecedented opportunities as well as critical challenges in higher education, which instructors and students must be mindful of so as to ensure that these technological developments will contribute positively to student learning. However, it should be noted that our empirical evidence consisted of only a graduate course in accounting. The limited scope of our sample should be taken into consideration when applying our findings to undergraduate students and courses of other disciplines.

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