AI IN ACCOUNTING EDUCATION

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The last human world chess champion was the Russian Grandmaster Gary Kasparov. He lost a match against Deep Blue, a chess playing computer program developed by IBM in 1997.[1] Although this was not technically a sanctioned match for the World Championship title, its significance was readily apparent to everyone.[2] The era of human dominance in chess was over. Deep Blue has since been surpassed by Stockfish, another brute force computational chess program and AlphaZero, a true AI that taught itself chess strategy by playing millions of games against itself. To put things in perspective, the current world chess champion has an Elo rating of approximately 2800.[3] The most recent version of Stockfish has an estimated rating in excess of 3500.[4] What does this mean? A 200 point difference in Elo ratings means the higher rated player will generally score at the rate of 3-1 to the lower player. A 400 point difference would result in a 10-1 outcome for the higher player. A 700 point difference would result in virtual annihilation of the lower rated and in this case, human player.[5]

What does this have to do with the use of AI in accounting? There are some similarities between chess and the world of accounting. A chess game occurs in a confined universe. There are 64 squares with 32 pieces. Each of the pieces can move in a prescribed manner and players take turns making moves. There are no outside influences on the game.[6] The contest is decided

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[1] Bowen and Watson, *Teaching with AI*. p vii.

[2] Kasparov later claimed Deep Blue cheated.   The allegation was based on changes to the programming while the match was occurring. The argument is beyond the scope of this paper, but even here there is a lesson for accountants. Change control processes are vitally important in the digital world.

[3] "Gukesh D FIDE Chess Profile."

[4] "Stockfish - Chess Engines."

[5] "I.S. 318 Chess Team."

[6] That is the optimal situation. Sometimes psychological or physiological factors influence the outcome of a game or match between human players. Computers don't have this "flaw".

solely "over the board." Accounting is in many ways similar. Its rules are fixed at any moment in time. An accountant researching a topic will find AI a valuable partner in this process, as it can sift through a tremendous amount of information in an amazingly short period of time to find answers to research questions. Unlike the world of chess, the number and amount of accounting rules continue to increase, often at an exponential rate. This makes AI usage even more desirable. Forty years ago, accounting firms would issue their employees four books that contained just about all the knowledge the employee would need to function effectively.[7] The required knowledge now would fill a small library. Accountants need to be able to search vast amounts of information on the internet and other databases and apply the research to real world situations. Like a chess playing AI, they need to assess the outcomes (analyze the position on the board) and make recommendations (make a move).

This is the first major use of AI in the accounting profession: technical research. As in chess, AI will come to dominate accounting research. An AI can provide instantaneous answers, often saving the accountant tremendous amounts of time. A second use of AI is completing more routine work such as tax return compliance and bookkeeping. This frees the accountant up for more value added tasks such as planning and budgeting. Dr. Sean Stein Smith of CUNY believes AI will speed up the accounting process as it will:

> "... gather data from invoices in accounts receivable, verifying the accounting of the invoices, routing invoices for payment or approval and even helping project cash flow. Automation, he added, also helps with AI to send reminders to clients, allowing staff to spend more time on critical tasks. It also works to reduce non-billable time by automating notifications, approvals and document management. "[8]

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[7] Generally accounting principles, auditing standards, the *Master Tax Guide*, and SEC Rules. The number and complexity of these standards have exploded since then.

[8] "Accounting Educators Look to Move the Profession Forward."

Not knowing how to use this efficient tool will be a detriment in the workplace. Does this mean the end of the accounting profession? Hardly. Consider the following:

1. The latest version of ChatGPT "aced" the four parts of the CPA exam, with an average grade of 85.1%[9]. Even AI had some difficulty with the CPA Exam! This is a perfect example of how AI can sift through a library and produce a correct theoretical answer. While this sounds impressive, any accountant knows they can't be 85% correct with their clients. Human input and analysis is still required.

2. As the CPA exam results show, AI handles rules-based decisions extremely well. It has more trouble dealing with questions of complex reasoning and ethics. To put it mildly, these are the types of problems human accountants face all the time. It is the application of the accounting principle to the facts and circumstances of the client that is often the crux of the issue, and not the actual accounting rules themselves.

3. Many of the commercially available AIs are simply not capable of handling sophisticated accounting questions. Large accounting firms are pouring billions of dollars into these programs.[10] Unfortunately, these proprietary AIs are not available to students.

Where does all of this leave us in the world of accounting education?

1. Students need to master the use of AI in researching accounting rules and principles. The use of AI will vastly reduce the time spent in this process and improve its accuracy. Students need to have a sound understanding and facility with question architecture for AI.

2. AI will need to be treated like a textbook. That is, the professor may consider prescribing a particular version of AI for the course and requiring students to use that application,

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[9] "ChatGPT Aces CPA Exam after Prior Version Flunked | CFO Dive."

[10] "Generative AI."

just as professors often require a particular textbook. Using a common AI in the classroom assists in teaching question architecture and in assessment of learning.

3. Critical thinking skills are still the king of the classroom and the business world. The use of AI technologies will only enhance student opportunities to think more critically and apply more problem-solving skills. Understanding how to use AI can contribute greater insight for a business, especially when looking at large datasets, ultimately leading to better decision making skills. A good foundation of AI technology-related skills will also contribute to understanding outcomes and trends, before they present challenges for the accounting firm. After AI performs the initial accounting research, the application of the accounting principles to the situation being analyzed still takes human skill. For instance, let's look at the world of taxation. Less emphasis should be placed on completing sample federal income tax returns in the classroom. This task can be handled by the AI once the applicable accounting requirements are determined. The true value add in such a situation for a client is the use of the tax return, the power of the AI, and human skill to perform tax planning, a money saving course of action, for the client. The best case scenario is for accounting firms to provide solutions and scenarios for clients that yield the best outcomes and AI will help generate those stories.

4. Instructors for upper level accounting courses should approach large accounting firms to see if their students can access the accounting firms' proprietary accounting AI applications. Many tax preparation companies do this already. Perhaps the accounting firms can be persuaded to allow students to train on these sophisticated AIs. Fictitious case studies can be used to demonstrate the opportunities for additional AI training.

5. Instructors need to be on the lookout for case studies being published by the large accounting firms requiring the use of AI for their solution. Academically appropriate websites and articles should also be used to develop an AI skillset.

6. Ethical questions should never be decided solely by an AI. Again, the AI can be used to research ethical principles, but at the end of the day, the application to a particular situation is the responsibility of the accountant. Education in ethical decision-making using AI is a must in any accounting curriculum.

Finally, students need to be made aware that accounting firms and other employers hire people with personalities and skills. They do not hire AIs. Artificial Intelligence is a force multiplier, but at least in the short run, will not replace the trained accounting workforce. Students need to be aware that not knowing AI is a major impediment in the job market. Paraphrasing Jensen Huang, you won't lose your job to an AI, but you might lose your job to someone who knows how to use AI. [11] Graduates and those first entering the workforce will need to have even greater skills related to AI technologies to remain relevant. . Employees who can demonstrate proficiency and build opportunities for future AI use, as well as understand any potential ethical situations, will outshine others in the workplace.

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[11] "Entrepreneurs On IG on Instagram."

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