

# Human-Computer Interaction: Universal Design for Learning and AI in Accounting Curriculum

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**Abstract**—An emerging landscape in educational tools are on the horizon and in the center is Artificial Intelligence (AI). Educators with vast years of experience are grasping to adapt to new teaching strategies to facilitate courses for a generation of students who may be more experienced in technology than their teachers. In the field of accounting, the technological functions to extract financial performances of businesses are changing in real time as well and the workforce has minimal experience with AI but employees must meet the need of client demands in the industries they serve. The coupling of the academics and the workforce brings to light a unique opportunity for accounting curriculum developers to engage students, while using universal course design and human-computer interaction tools integrated with artificial intelligence to close the gap of artificial intelligence knowledge in the workforce and to forge forward to meet market demands in the accounting industry. This paper provides insight into the artificial intelligence tools that are utilized by students to complete higher education assignments, and the research results enable curriculum developers to understand how they can reshape the student's learning experience through inclusive education.

**Keywords**—artificial intelligence, universal course design, human-centered design, accounting curriculum, learning disabilities, inclusive education

## I. INTRODUCTION

Teaching Accounting and the way we process financial statements has changed over time, which can be attributed to the rapid advancement of technology. Technology assists in connecting business operations worldwide and the accountant for these businesses have the ability to produce financial statements and provide the statements globally in a matter of minutes. As a result, how we prepare future accountants during their matriculation in studying the discipline of accounting prompts high consideration of integrating technology in an accounting program curriculum because it is "How we do Business" today. This research addresses the impact of technology in accounting curriculum utilizing the Universal Design of Learning (UDL) and integrating artificial intelligence (AI).

As artificial intelligence technologies become increasingly visible in businesses there is a demand for educational resources to integrate the technologies in lesson planning. This proposes new problems and limitations. One of the major concerns in academia is academic integrity and secondary is the limited age of artificial intelligence. Academic integrity in higher education has experienced challenges in the developments in artificial intelligence. ChatGPT has become a popular tool that students use for citations and text generation for fact finding, however

research has shown that outcomes are filled with assignments that lack accuracy. Most notably, ChatGPT has been prone to errors and fabrication of information which poses a risk to professionalism, ethics and integrity [1]. As a result, teachers are required to structure assignments in a way that guides students to analyze the information for reliability instead of assuming the accuracy of the ChatGPT results prior to completing an assignment.

Secondly, the limited experience and new developments in artificial intelligence causes obscurity in the results and dependability of the technologies being deployed in the classroom. There is limited research in academics with artificial intelligence integration. In a search for research-based literature, prior to 2016 there were no published articles. Hence, this limited knowledge leads to the discoverability element in relying on artificial intelligence in academia. As artificial intelligence continues to evolve there is a charge for educators to consistently employ tools into curriculum to prepare students for work life skills in the future. Therefore, there is an urgent need to design accounting curriculum in a method that motivates future Accountant AI usage in business functions in the future; this is explored in the literature review, methodology, research results and future research recommendation sections.

## II. LITERATURE REVIEW

Artificial intelligence (AI) is one of the emerging technologies. In recent decades, artificial intelligence has gained widespread acceptance in a variety of fields, including virtual support, healthcare, security and education [2]. Artificial intelligence's role in education has changed the way educator approach lesson planning and helps customize learning outcomes to student's learning capabilities. Artificial intelligence involves the use of algorithms that analyze data, identify patterns, and make predictions [3]. Thereby, making prior barriers to learning an attainable task. This is significant in teaching students with learning disabilities. Programs such as Microsoft's Co-Pilot empowers students with disabilities to perform task such as preparing PowerPoint presentations by using human-computer interaction voice commands. Generative AI allows educators to create dynamic, engaging, personalized learning experiences that resonate with every student, regardless of their unique situations or special needs [4]. When educators accommodate all students they employ a universal course design and foster a positive learning environment for students which leads to heighten academic outcomes. Employability adds to the opportunities that open

up for students that are well trained in futuristic technologies like AI. As the world continues to adapt to Artificial intelligence, it becomes reassuring that companies will have the ability to scale successfully when the incoming workforce of young talent is well versed in Artificial Intelligence.

### III. MATERIALS AND METHODS

The basic philosophical assumption underlying exploratory qualitative inquiry is that we can attempt to understand phenomena through the meanings that participants assign to them [5]. Educators often face obstacles with connecting to their students and face challenges with helping all students reach their highest achievement capabilities due to many factors existing in a classroom. Those factors may be related to learning styles and lack of accessibility. According to Creswell, students participate in courses based on how they relate a meaning to the assigned activities. Because of the subjectiveness to this philosophical assumption, it is almost impossible for an educator to reach everyone based on their inherent meaning of a task assigned. This study analyzes how universal course design coupled with artificial intelligence has assisted educators in achieving the highest performance amongst students in accounting courses.

Using the Universal Design For Learning (UDL) framework ensures that learners have multiple means to engage in learning, are given the information and content instructions through multiple modalities and can demonstrate their learning via multiple means [6]. Universal course design is an educational framework that aims to create courses accessible to all students regardless of their learning style sensory abilities and physical abilities. It is rooted in the principles of universal design for learning, a set of guidelines for developing curriculum that provides all individuals equal opportunities to learn. Universal course design focuses on proactive design of courses to ensure that all learning materials and activities are accessible and inclusive from the start rather than making it retroactive accommodations, this approach not only benefits students with disabilities but also enhances the learning experience for all students by addressing diverse learning needs.

In academia there are various learning styles Visual, Auditory and Kinesthetic and it has been taught for decades to accommodate students based on those learning styles. However, academia must broaden its parameters of inclusivity to address the needs of students with disabilities. In addition, the complexity that was addressed during the COVID era is the need to accommodate students with learning management systems while learning online. Gathering resources to include all learners is a plight that educators have had to address. In addition, the heightened involvement of artificial intelligence has required educators who historically used face to face engagement such as in-class group activities, whiteboard writing activities and in front of the classroom lecturing; are required to enhance their technological skills to meet the needs of students today. One of the solutions is to use universal course design

coupled with artificial intelligence to deliver first class curriculum in university courses.

Artificial Intelligence (AI) integrated with curriculum embodies the ability to bring student the accessibility required to employ a skillset to adapt to work capabilities in their future careers. AI will be ingrained in the day-to-day operations for businesses garnering the consumer interface experience. Since the workforce is diverse, this should be mirrored in the learning process for students. AI integration in the course room can equip all students including students with disabilities to carry out course assignments simultaneously.

Timeliness and effective communication within directives given to students in their tasks, is relevant for the educator and the student. Specifically, in accounting curriculum, it is essential that students perform analytical studies of a company's performance for a specific period and have the ability to communicate the company's performance to its shareholders, creditors and owners. Therefore, a study was conducted to test the adaptability of AI integration using Universal Design of Learning for students enrolled in Financial Accounting and Managerial Accounting courses.

Data was collected over two academic terms utilizing students presentation in Financial Accounting and Managerial Accounting courses. Students were provided with a case study of a company and were required to prepare a presentation outlining the company's SWOT analysis and financial performance. Students used Accounting Lab Software to analyze the company's financial performance. In addition, the students were required to draft a memorandum to the Board of Directors inviting them to the presentation. Students were required to present their presentation using a slideshow format in either PowerPoint, Google Slides or Canva.

### IV. RESULT AND DISCUSSION

As a professor presented with the opportunity to teach abroad, there were going to be some language and cultural barriers. However, I did not anticipate that there would be barriers to resources. Upon onboarding at the university, I was made aware that the academic environment did not utilize physical textbooks, and all students were provided laptops as the only learning resource. With the knowledge that the student population primarily spoke Arabic and conversational English it was pertinent to create a classroom environment that would be inclusive of all learning styles and one that would allow flexibility in learning. Therefore, understanding the framework of the Universal Design of Learning, I created curriculum that utilized Accounting Lab software where students utilized online resources to meet the learning outcomes of the course.

The Accounting Lab software engaged auditory learners with voice recorded PowerPoints and instructional how-to videos for analyzing financial data presented in the case studies. Thereby, assisting visual learners as well with those resources and an e-textbook link for students preferring thorough explanations and theoretical knowledge. For the Kinesthetic learner, practice problems, homework and

assessments were all accessible within the online lab. The lab portion of the course allowed students access to educational resources 24 hours a day and 7 days a week.

For this study specifically, students were required to work on their assignments independently and were encouraged to utilize resources that fit best with their learning styles to complete the case study. For, UDL focuses on learning relevance, value, and authenticity in terms of learners' needs and desires through the inclusion of real-life tasks and an understanding of the importance of flexibility [7]. In addition, transitioning from the typical pen and paper learning strategy to adopting the computerized accounting strategy provides the students with significant skills to enter the Accounting industry prepared to work.

According to Table 1, there were 129 students that participated in the study. Students were asked to identify which learning style equips them the best in their studies. In

the study, students who've received accessibility accommodation from the university's office of disabilities were identified to benchmark the AI Software utilized in their presentation preparation. Forty-three percent of the student participants utilized PowerPoint and Co-Pilot (AI) software to prepare their presentations. Twenty-three percent of the student participants utilized Goggle Slides and Plus AI software to prepare their presentations. Thirty-four percent of the student participants utilized Canvas and Magic Design to prepare their presentations. As it relates to student with disabilities requiring accommodations; 3% used PowerPoint and Co-Pilot (AI), 23% Goggle Slides and Plus AI while 2% utilized Canvas and Magic Design to prepare their presentations.

Table 1. Student demographic and AI program usage

	PowerPoint	Google Slides	Canva	Co-Pilot	Plus AI	Magic Design
Preferred Learning Style						
Visual	10	3	17	55	30	44
Auditory	18	7	15			
Kinesthetic	25	13	11			
Students with Disabilities and Required Accommodations	2	7	1			
<b>TOTAL</b>	<b>55</b>	<b>30</b>	<b>44</b>			<b>129</b>

Students were asked for their feedback relating to the usage of AI while learning Accounting and three trends were revealed. The first trend was the ease of data extraction. Student felt originally intimidated by AI and the newness of the technology usage in curriculum in which they felt reluctant to use it to complete a significant assignment. However, astonishingly they all felt relieved that there was an interactive platform that integrated with software such as PowerPoint which had an element of familiarity in prior courses. The second trend was timeliness, although students were required to site resources to ensure originality in their presentation, they all noted the reduction in the time to extract the factual data and transfer to a presentation template like Google Sheets was noted as significant. The final trend is inclusivity, this was specifically a commonality among the students with disabilities. All the students with disabilities expressed gratitude for considering their accommodations in an assignment integrating AI. The evolution of their experiences with traditional assignment was forever changed as they were able to forego their accommodations requiring more time on assignments or a note taker as the AI tools integrated tools to ensure the student experience was inclusive for all learners, meaning they didn't feel singled out. The most impactful experience occurred with a student that had no hands of which he utilized voice commands with Co-pilot to complete his presentation. Overall, the study found that Universal Course Design and AI have leading edge capabilities for all students.

## V. OTHER RECOMMENDATIONS

As artificial intelligence continues to evolve there are opportunities for future research. Third-wave AI, closes the gap between Human-Centered AI (HAI) and Artificial Intelligence (AI) which allows the technology to use more human interface instead of replacing humans, future research in this area would be beneficial. In addition, there are opportunities for study aids integrated with artificial intelligence to foster more of a continuous application of universal course design in the learning environment. Further development in these research areas will close the knowledge gap between current educational offerings that engage technology.

## VI. CONCLUSION

Preparing future accountants globally to align with Generally Accepted Accounting Principles comes with barriers but it is pertinent in fostering congruence amongst accountants globally. Therefore, integrating artificial intelligence technology in a non-textbook academic environment proves to be a great fit as a learning resource. In a study conducted by [8] it was noted that one of the changes seen over a ten-year period was the positive change in lower achieving student's; their performance in their courses improved positively when given the alternative to express their knowledge with technology in the classroom.

Non-UDL designs often view diverse needs from a deficit perspective, whereas UDL accommodates diversity in

different ways as it reorients how knowledge is defined, obtained, and expressed by embracing differences. It is also important to understand that every learner has limitations depending on how the content is structured and shared [7]. Therefore, an inclusive learning environment ensures all learners' needs are met. To address the academic integrity risks with artificial intelligence, educational institutions or policymakers are tasked with the responsibility to create policies and guideline that will provide students with clarity on the methods to optimize the usage of tools such as ChatGPT and various generative artificial intelligence tools. Course facilitator should make it clear that the usage of AI is not a substitute for human education but a mere vehicle to be used to assist with education. In the field of accounting this is key because the interpretation of a company's financial results need to be properly communicated through human interaction and understanding. Thereby, reinforcing the need for future accountant to understand the value of their role in business operations. Therefore, this research shows a trend of artificial intelligence resources that are readily accessible to all students and provide insight into which tools are adaptable to the accounting industry sectors.

Overall, students were fully engaged, and barriers of intimidation were broken in the AI integrated courses. Students expressed timeliness with productivity increased with the usage of AI. In addition, all students reached their end goal within the same due date regardless of their learning abilities. According to [9], this type of engagement should be the impetus that drives the use of technology in the school. Its use can allow teachers and students to become partners in the learning process.

In conclusion, engaging students is vital to their preparedness for their future careers. In the field of accounting integrating technology to facilitate courses is important and weighs heavily on the format in which students are taught. This study proves that students perform better when they use technology in a learning environment

because it is a part of their future career and life experience.

# CONFLICT OF INTEREST

The authors declare no conflict of interest.

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