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Teaching beyond the screen: Virtual accounting education and the future of learning in Saudi Arabia

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ABSTRACT

This study examines the sustained impact of virtual learning on accounting education in Saudi universities during the post-pandemic period, drawing on empirical data collected between February and May 2024, reflecting the normalization of digital and hybrid learning environments beyond the emergency phase of COVID-19. It found that teaching flexibility, institutional support, and student self-regulation are key factors in the success of virtual accounting education. Faculty using interactive case studies and digital collaboration tools improved engagement and performance. Universities investing in digital infrastructure and training created inclusive learning environments. Challenges include authentic assessments, digital fatigue, and motivation in areas like accounting. The research highlights the transformative role of virtual education in Saudi Arabia and the importance of institutional policies in emerging economic systems.

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1. INTRODUCTION

The COVID-19 pandemic resulted in one of the most significant changes in global higher education within recent global history. Within just months, educational institutions worldwide shifted from traditional, face-to-face teaching to full immersion into virtual classrooms, forcing educators to reevaluate long-standing pedagogical techniques. While this shift stimulated innovation in learning techniques, it also illuminated significant disparities in preparedness, access, and effectiveness in pedagogy, especially among disciplines that depend upon applied, technical and ethical reasoning such as accounting. Accounting education is dependent upon the transfer of conceptual knowledge, along with the building of professional judgment, analytical reasoning, and ethical decision-making. These latter competencies are not merely taught through rote transfer but through interaction in the classroom, through activities, and through case-method problem-solving techniques. As higher education constructs moved into online platforms, certain fundamental questions faced educators. How would it be possible to retain the important depth, rigor and integrity of accounting education, as the latter was now restricted to virtual education?

In Saudi Arabia, this latter proposition became part of a larger national discussion over the future of education and of the digital economy and markets. Vision 2030, the Kingdom's version for the future, elucidated the modernization of human capital, along with the expansion of digital infrastructures in order to prepare the students of today for the demands inherent within the Fourth Industrial Revolution. Within that context, the programs launched through the Ministry of Education and the National eLearning Center (NELC) focused upon the expeditious world of virtual learning not just as an emergency measure, but as a strategic planning implement in the long-range transformation of higher education Almost all of Saudi Arabian colleges had integrated innovative LMS by 2022 which included Moodle & Blackboard as well as interactive accounting software and virtual assessment tools to support students.. This quick adoption represented a historic tipping point: accounting education, which in the past had been characterized by face-to-face contact, audit simulations and manual work, had effectively to reinvent itself in a digital environment. Despite impressive national commitments and investments in infrastructure, however, the lived reality of virtual learning in accounting classrooms is complex and uneven. Many faculty had embraced the online flexibility of tools but had found it difficult to gain student engagement, authenticity of assessment and the collaborative nature of audit and financial reporting exercises. Students themselves, particularly in lower years of study, complained of isolation, lack of vocational exposure and practical understanding of complex areas such as IFRS and cost accounting in virtual environments. Such conflicting evidence reveals the tensions between the access to technology and the depth of pedagogy, which is not confined to Saudi Arabia, but has an international resonance. While this study is empirically grounded in accounting programs, the pedagogical implications extend to other professionally oriented disciplines that rely on applied reasoning, ethical judgment, and technical competence. However, it has particular relevance in the case of Saudi Arabia since it has unique implications in view of the culturally based emphasis on classroom operational interaction, different levels of emergent digital literacy and the overall transformation of national policy in education. From an academic perspective, previous studies have explored virtual learning outcomes in general education and business areas, but very few studies have taken place, which have specifically analyzed accounting programs in the context of Saudi Arabia supported by empirical evidence (Alharbi & Ahmed, 2023). There is also evidence from the United States, Australia and the United Kingdom, which would suggest that both online and blended formats have enhanced flexibility and primacy of the student in the learning experience but have reduced collaborative learning and performance in technical areas. Studies in Malaysia, UAE and Egypt reveal similar mixed outcomes showing that effectiveness often depends on the state of digital readiness of students and institutions, instructional design, the state of digital readiness of students and institutions and their support (Bryant et al., 2020; Henderson et al., 2017; Almahasees et al., 2021; Ibrahim et al., 2022; Othman & Amiruddin, 2023). However, limited comparative evidence exists as to how results of these global studies translate into the higher education system in Saudi Arabia, particularly in view of its rapid digital transformation and the strong association with the benefits of Vision 2030 strategy.

Therefore, this research will address a timely and under-researched issue; namely, "how has virtual learning affected accounting education at Saudi universities?" and "what lessons may be derived from the experience of virtual learning for the development of the future of business education?" The study will utilize a mixed methods approach to gather quantitative survey data along with qualitative interview data. The quantitative and qualitative approaches are needed for a comprehensive analysis of both the human and system-based aspects of virtual accounting education. In particular, the research will explore perceptions of Saudi University faculty and students regarding the effectiveness of virtual learning environments (e.g., design of courses and assessments; institutional support) that can affect their ability to adapt to virtual learning.

This research will contribute to three bodies of literature. First, the accounting education literature will be expanded through the provision of empirical evidence about how digitalization influences the quality of teaching, assessment design and learning outcomes. Second, the educational technology and pedagogy literature will be advanced through the contextualization of global frameworks (for example, constructivism, connectivism, and self-regulated learning theory) within the realities of higher education in Saudi Arabia. Finally, this research will make contributions to policy and governance debates by identifying how national reform (in the form of Vision 2030) can shape pedagogic practices and link institutional digital strategy to national objectives. By positioning Saudi universities as a compelling case study of how accounting education is being reimagined in a post-COVID-19 pandemic context, this research argues that virtual learning should be seen as a transformative tool for creating more flexible, inclusive and competency-based curricula rather than simply as a temporary adaptation. In order to achieve this transformation, there needs to be an evidence-based understanding of what works, what does not and

what structural conditions facilitate successful outcomes. Therefore, the findings of this research are relevant to not only the educators and policymakers in Saudi Arabia, but also to international researchers interested in exploring how virtual learning transforms the way in which professional disciplines are taught in emerging markets. Unlike early pandemic studies, this research reflects a more mature stage of virtual learning implementation, allowing for an evaluation of long-term pedagogical adaptation rather than short-term emergency responses.

2. LITERATURE REVIEW

2.1 The Emergence of Virtual Learning in Higher Education

Virtual learning has progressed from an auxiliary mode of teaching to a mainstream teaching model. Initial understandings of online learning in the late 1990s and early 2000s focused on efficiency and scalability with a view towards content delivery rather than interaction (Anderson, 2008). With subsequent research, however, virtual learning has been repositioned and reframed as a transformative pedagogical thrust based on constructivist and connectivist learning theories (Vygotsky, 1978; Siemens, 2005). Constructivism suggests that learning is active in nature, wherein the learner constructs meaning from contexts and social interaction (Piaget, 1985), while connectivism suggests that learning can occur across a digital span, which is made possible by technology and by dissemination of knowledge (Siemens, 2005). On this basis, virtual education is not merely a utilization of technology but is instead regarded as an environment that fosters interactive engagement and autonomy in the learner. Empirical studies indicate that well-structured online and blended delivery modes can achieve results which are comparable to and which can even exceed the effectiveness of traditional classroom modes of delivery. Meta-analytic studies by Bernard et al. (2014) and Means et al. (2013) indicate that the effectiveness of online learning depends largely upon the level reached with instructional design, interactivity, feedback and similar factors. On the other hand, it becomes evident that poorly designed virtual modes can lead to superficial understanding, isolation of students and low levels of motivation (Rapanta et al., 2020). It becomes all the more evident that these distinctions should be very much in the forefront of the approach to discussion of such professional disciplines as law, accounting and business in general. The benefits of virtual learning lie in the flexibility and scalability it offers; but the pedagogical foundations for subjects which rely on application, discussion and ethical reasoning are challenged. The question thus lies not in whether or not the education of accountants is capable of going online, but rather how it can properly do so in such a way that the professional demands and rigors of this vocation are achieved without loss of integrity in the digital training mode presented.

2.2 Contextualizing the Saudi Environment through Vision 2030

The Saudi environment is ideal for examining the implementation of virtual accounting education for several reasons. It is one of many countries experiencing rapid technological changes as well as undergoing significant changes in their educational environment. According to Vision 2030, the government's long-range plan, education and the development of its human resources are two key areas identified to support the country's move to become less dependent on oil revenues. Vision 2030 advocates for the use of technology in all subject matters and in the development of digital literacy among teachers (Saudi Vision 2030, 2016). Before the COVID-19 pandemic, some Saudi Universities began exploring the use of Learning Management Systems (such as Blackboard and Moodle) as part of their digital learning initiatives, with the help of the National e-Learning Center (NELC), and the Ministry of Education (MoE). However, the pandemic served as a catalyst that rapidly transformed digital learning into a strategic imperative (Al-Shehri, 2021). This transition was supported by national digital education policies issued by the Ministry of Education (MoE, 2022). By 2021, nearly all of the universities in the Kingdom —both public and private—integrated full-fledged virtual delivery platforms. A number of empirical studies have documented a variety of results from the rapid shift to virtual learning environments. For example, Alenezi (2022) indicated that accounting faculty believed that online learning was a suitable vehicle for disseminating course material; however, it did not facilitate collaboration. Additionally, Al-Qahtani and Al-Mudimigh (2021) found that while students benefitted from the flexibility offered through virtual learning, both experienced barriers to motivation and assessing fairness; a third study conducted by Alshammari et al. (2023), indicated that there was an inequality between public and private universities as to how ready they were to deliver digital learning experiences. The students attending private universities had a higher level of satisfaction than those at the public university level due to previous investment in e-learning for the private institutions.

Historically, the emphasis of higher education in Saudi Arabia has been on instructor-led learning and face-to-face interaction. As a result, virtual learning created a necessity for both students and teachers to learn new skills such as self-directed learning, collaborative work through technology and independent decision-making (Al-Ghamdi, 2022). The transition into online learning is also aligned with Vision 2030 and developing the skill set of the Saudi population to be innovative and think independently. However, similar to the debate-taking place globally, the transition to virtual learning in Saudi Arabia also serves to demonstrate how the reforms being implemented in accounting curricula are aligned with the expectations of the professions. Marriott and Marriott (2003) demonstrated that students' perceptions of accounting as a profession are primarily based upon whether accounting is depicted as an exciting and intellectually stimulating profession, or simply as a routine technical function. Similarly, Pan and Perera (2012) argued that the relevance of the curriculum to the needs of employers will serve to increase the level of interest and motivation that students have in their studies. Therefore, the incorporation of digital and professional skills in the curriculum by Saudi Universities signifies a national effort for educational reform as well as an alignment with international trends to develop accounting education to address the needs of today's working environment.

2.3 Challenges and Opportunities in Accounting Education via Virtual Platforms

The shift to virtual platforms for education has exposed both barriers to innovation in teaching methods in accounting and opportunities for improvement. The five major categories of challenges include academic integrity; student engagement; faculty preparedness to teach on-line; developing innovative assessments; and providing institutions with adequate resources to implement these changes. Academic integrity continues to represent a significant challenge to all educators. On-line testing has created an environment where there is a greater risk of plagiarism and collusion (Lanier, 2020). While many Saudi universities utilize sophisticated proctoring software and have implemented honor codes, a number of faculty continue to question the validity of remote testing mechanisms (Alenezi, 2022). According to Waggoner and Doran (2021), it is more productive to focus on assessing student knowledge through case study type, open-ended questions, and reflective writing rather than relying solely upon testing. Additionally, student engagement is another major factor that contributes to the overall effectiveness of virtual learning Accounting courses require students to possess a strong conceptual framework, to practice often and iteratively, and to engage with their fellow students, all of which are difficult to attain in a strictly on-line or asynchronous environment. Studies indicate that students feel disengaged from their virtual classes and have a report of less motivation and increased dropout rates (Tempelaar et al., 2017). However, student engagement can be stimulated through the use of educational technologies such as gamification, interactive simulations, and collaborative problem-solving technologies such as Kahoot and Mentimeter (Al-Ghamdi, 2023).

Research on student motivational factors in accounting education also provides additional insight. Research conducted by Byrne and Flood (2008) and Marriott and Marriott (2003) indicates that students' attitudes toward accounting are influenced by their perception of how relevant the course material will be to their future careers. Attitudes and beliefs toward accounting will therefore significantly affect students' willingness to participate and persist in their coursework. Therefore, not only will faculty need to incorporate technological innovations to maintain student engagement in virtual classes, they will also need to establish affective connections between students and the content of the class, so that students understand how their coursework will contribute to their professional development and will help them achieve their long-term career goals. Faculty preparedness and institutional support are essential components to the success of virtual education. Faculty members who are trained in on-line pedagogy and in the use of digital tools, exhibit increased confidence and are able to produce improved student outcomes (Almahdi & Alnasser, 2022).

Institutions that provide ongoing support in terms of technical assistance, instructional assistance, and psychological assistance, will be able to sustain high-quality digital learning environments. The findings are in agreement with previous research which indicates that virtual learning can be viable only with a complete supporting system (and not as a standalone program). The transition to virtual education provides many potential avenues for advancing new instructional methods. For example, hybrid-learning models provide universities with the opportunity to combine the flexibility of on-line learning with the structured environment of traditional classrooms, using synchronous classroom time to facilitate group discussions and asynchronous on-line modules to deliver foundational knowledge to students. Additionally, data analysis provided by learning management systems (LMS), allow for the tracking of student engagement and immediate reaction from a teacher when it appears that a student is experiencing difficulty with course material (Ifenthaler & Yau, 2020). These types of opportunities support the goals of Saudi Vision 2030, which calls for creating learning environments that are based on empirical

research and focused on the needs of the learner, and that prepare students to meet the demands of the emerging economy. To ensure methodological rigor, all empirical and theoretical sources cited in this study were cross-checked to align in-text citations with the reference list, following APA consistency requirements.

2.4 Conceptual Framework

The literature clearly shows that there is a multidimensional approach to what defines successful virtual learning especially in professional fields such as Accounting. Based upon Garrison's Community of Inquiry (2000), Davis's Technology Acceptance Model (1989), and Zimmerman's (2002) self-regulated learning theory, this study views successful virtual learning as the result of interdependent factors in terms of technology, pedagogy, and behavior.

Technology Readiness – Faculty and students have access to reliable and user-friendly digital tools to create and share learning materials.

Teacher Flexibility — Faculty are able to adapt curriculum and teaching practices for increased student interaction and to illustrate key learning concepts through virtual learning environments.

Administrative Support — University administrators are committed to providing support to instructors who wish to enhance their virtual learning skills; provide ongoing professional development to instructors; and give students constructive feedback about how they perform in virtual classrooms.

Student Motivation & Self-Regulation — Students' self-motivated learning behaviors, persistence, and intrinsic motivation.

Assessment Authenticity — The integrity and relevance of assessments to actual accounting practices in the workplace.

Additionally, based on prior research on international accounting education, the conceptual framework incorporates an additional sixth cross-sectional area: Professional Relevance. As argued by Jackling & De Lange (2009), Pan & Perera (2012), and Wells et al., (2009) virtual learning platforms should provide accounting students not only with the knowledge they need to succeed academically, but also the professional judgment, communication, and technological competence necessary to meet employers' expectations. By incorporating these professional competencies into virtual learning programs, accounting graduate will be able to meet both academic and industry standards. The emphasis on professional relevance aligns with national accounting competency frameworks issued by SOCPA (2020). Therefore, this multi-dimensional conceptual framework provides a base for investigating how virtual learning is transforming accounting education at universities across Saudi Arabia. This conceptual framework presents virtual learning as a systemic ecosystem in which technological readiness is linked to pedagogy, institutional strategies, labor market relevance, and reflects both global trends and national reforms as part of Vision 2030.

3. METHODOLOGY

3.1 Research Methodology

A mixed methodology was used for this study to gather data quantitatively as well as qualitatively to have a full understanding of how virtual learning has impacted the way Accounting is taught at Universities in Saudi Arabia. A rational for using a mixed methodology is that it will allow the researcher to measure the number of positive or negative responses from the survey; but will also allow the researcher to get a better understanding of what the respondent's mean by their answers through the qualitative method of semi-structured interviews. The quantitative component of the study focused on measuring trends through a structured questionnaire that was administered to selected accounting faculty and students in selected universities in Saudi Arabia. The qualitative component of the study focused on gathering additional information regarding the attitudes, challenges, and new ways of thinking through semi-structured interviews with the same selected accounting faculty and students in Saudi Arabian universities. By allowing the quantitative findings to be explained by the qualitative findings, the researchers were able to use a sequential explanatory design (Creswell & Plano Clark, 2018), and therefore were able to provide an expansive view of the analysis while also providing a deep view of the analysis. Both qualitative and quantitative methods will provide a good opportunity for the researchers to understand the data collected through the surveys and interviews, to relate those findings to other studies related to the topic, to develop recommendations for policy makers, and to assist educators in developing curricula and innovative instructional strategies.

3.2 Sampling and Participants

The population consisted of eight universities located in the Kingdom of Saudi Arabia covering the diversity of Saudi universities in terms of private and public universities at the level of all regions of the country (Central, Western, Eastern and Northern regions) They were as follows: King Saud University, King Abdulaziz University, Taibah University, Princess Nourah University, University of Jeddah, Imam Abdulrahman Bin Faisal University Prince Sultan University, Dar Al-Hekma University This sampling frame would ensure heterogeneity in respect of size, resources and digital infrastructure. Selection of participants. The sample for the study was subdivided into two distinct main groups of interest as follows:

• Members of the faculty. Accounting instructors who had experience of at least 2 semesters of experience in virtual teaching.

• Students. Undergraduate accounting students equally qualified (levels 4-8) with experience of at least 1 subject accounting in fully online mode.

In the selection of the sample a stratified purposive sampling method was adopted in order to ensure representation in respect of gender, the type of institution involved and the experience. The total number who completed the survey was 312 including 92 faculty and 220 students. From this, a sample group of twenty participants (10 faculty and 10 students) were invited to participate in semi-structured interviews, this was to encourage a more in-depth qualitative response.

3.3 Research Tools

The quantifiable component of this study utilized a structured survey, which was based upon established questionnaires for virtual learning and accounting education research (Alenezi, 2022; Watty, 2021).

The survey contained five major sections that matched the conceptual framework as described below (Section 2.5):

- Technological Readiness (resources available, usability of the platform, and digital support).
- Teaching Adaptability (faculty strategies to present technical material while keeping students engaged.
- Faculty access to institutional resources (training; technical assistance; administrative support)
- Student motivation and self-regulation (student ability to work independently, discipline; student level of engagement in course content)
- Authentic assessment (the fairness, originality and honesty of online assessments and assignments)

All items were scored using a five-point Likert scale (1 = "strongly disagree," 5 = "strongly agree"). There were 30 total items on the final version of the instrument (6 items per dimension).

Prior to conducting the survey, a pilot study involving 20 participants (10 faculty members and 10 students) was completed to verify that the items within the survey were clear and had content validity. The subtle changes made to language enhanced the ability to understand both the English and Arabic versions of the polls.

To supplement the findings obtained through the surveys, semi-structured qualitative interviews were devised to give additional insights. The interview guide consisted of open-ended questions regarding:

• Experience(s) with online teaching/learning of accounting.

• Strengths and weaknesses of online learning platforms.

• Suggestions for how to keep students engaged and to ensure the integrity of assessments.

• Suggestions for developing hybrid or digital curriculum in the future.

All interviews were conducted either in English or in Arabic based on the preference of the participants. Each interview lasted approximately 40 to 60 minutes. All interviews were audio-recorded with the permission of the participants and were transcribed verbatim.

3.4 Data Collection Procedure

Data collection for this study was conducted between February and May 2024, capturing faculty and student experiences during a post-emergency phase in which virtual and hybrid learning had become institutionally embedded rather than a temporary crisis response. The survey was conducted using an electronic format through e-mail invitations. This provided wider accessibility for participants during ongoing hybrid learning activities. Participants were informed of the voluntary nature of their participation, and anonymity on behalf of both institutions and individuals was guaranteed. Interview participants were selected based on their willingness to elaborate verbally on survey responses. Attention was made to sample representation in regard to gender and institutional type. Most interviews were done using Microsoft Teams or Zoom because of geographic dispersion and convenience.

3.5 Data Analysis

Analysis Quantitative information was taken through SPSS version 28. The following statistical methods were utilized: Descriptive statistics

were calculated illustrating the mean and standard deviations overall for each of the constructs. Reliability analysis was conducted using Cronbach's alpha. Internal consistency was confirmed through Cronbach's alpha coefficients exceeding the acceptable threshold of 0.70, indicating satisfactory reliability across all constructs. Variables were acceptable for internal consistency having values over 0.70 (Hair et al., 2019). Correlation analysis was conducted for relationships among the variables. Multiple regression models were run that showed predictive variables for perceived effectiveness of virtual learning, specifically as it pertained to institutional assistance and instructor adaptability. An ANOVA statistical test was used to evaluate differences across demographic groups (gender, institutional type, years of teaching experience). This provided the opportunity to evaluate both inferential and diagnostic factors about how various factors shaped observations about virtual learning quality. Qualitative Analysis Qualitative analysis of the data set was conducted by utilizing a thematic analysis (Braun & Clarke, 2006). Transcripts of the interview sessions were manually coded specifically to allow for the emergence of themes, followed by iterations of coding aimed at establishing larger categories reinforcing the constructs. The niacin analytic steps included: Initial coding, recurrent phrases illustrating engagement, problems and innovative thinking. Axial coding, coding was organized into codes showing larger categories such as "pedagogical innovation," "digital fatigue," and "assessment improvement." Theme emergence, which gave rise to total themes illustrating faculty and student impressions. NVivo (version 14) was implemented in analyzing the qualitative data, and the tagging process assisted in the important process of managing and visualizing qualitative diamonds of data. The triangulation between data sources (faculty vs. student impressions) across sources (survey instruments vs. interview instruments) adds credence to the overall perspective of findings.

3.6 Validity, Reliability, and Ethical Considerations

Validity and reliability were achieved in this study through a variety of means. The theoretical framework established as part of this research aligns with other existing theoretical frameworks including Community of Inquiry, Technology Acceptance Model and Self-Regulated Learning Theory. This is an example of construct validity. The content validity of this research was validated through a review of the instruments developed in this study by three experienced accounting educators who are also experienced users of e learning in Saudi Arabia. Reliability was assessed using Cronbach's Alpha, which yielded .82 indicating that there is good internal consistency across the items developed for this study. Internal consistency was confirmed through Cronbach's alpha coefficients exceeding the acceptable threshold of 0.70, indicating satisfactory reliability across all constructs. Member checking was used to assess the reliability of qualitative data by providing summaries of interview findings to participants for their validation and interpretation. In addition, peer debriefing between co-investigators enhanced the interpretative reliability of this study.

This research received ethical approval from the Institutional Review Board (IRB) prior to participant recruitment and engagement. The study adhered to established ethical research standards as outlined by the American Educational Research Association (AERA, 2011). Participation in this study was entirely voluntary. All participants who participated in this study provided written informed consent and no identifying information was collected or retained during the course of this study. Confidentiality was maintained in all aspects of the research process. Additionally, digital recordings of interviews were stored in a secure manner and were deleted once the project was completed.

4. FINDINGS

4.1 Participant Information

In total, 312 participants took part in this research, which included 92 accounting faculty (29.5%) and 220 undergraduate accounting students (70.5%) from eight Saudi Universities. The gender breakdown among the faculty group was as follows: 61 percent male and 39 percent female, while 73 percent of the faculty group taught at a university owned by the government. Faculty had between three and twenty-two years of teaching experience, averaging 9.4 years of teaching experience. In terms of student level, 85 percent of students participated in the study as sophomores through seniors (Levels 4-8). Additionally, the students had a near equal split of females (56 percent) to males (44 percent), who both participate in the growing number of Saudi women in accounting education programs since Vision 2030 reforms. The majority of participants reported having access to the Internet and being familiar with the platforms provided in this study. Specifically, 91 percent of participants reported using Blackboard regularly and 78 percent used Microsoft Teams for synchronous sessions. Nevertheless, approximately 26 percent of participants reported experiencing intermittent or inconsistent internet connectivity problems during some online classes – especially when their location is remote. A summary of participant demographics and technology-readiness can be found in Table 1.

Variable	Category	Percentage (%)
Gender (faculty)	Male / Female	61 / 39
Gender (students)	Male / Female	44 / 56
Institution type	Public / Private	73 / 27
Average teaching experience (years)	—	9.4
Regular use of LMS (Blackboard/Moodle)	Yes	91
Stable internet connection	Yes	74
Prior online course experience (students)	Yes	82

4.2 Correlational Analysis

Pearson's correlation analysis revealed statistically significant positive relationships among all five constructs examined in this study ($p < .01$), indicating meaningful associations between technological, pedagogical, institutional, and student-related factors within virtual learning environments. Student motivation demonstrated the strongest correlation with teaching adaptability ($r = .62$), indicating that instructional approaches that allow instructors to adapt content, pacing, and interaction strategies are critical for fostering student engagement in virtual learning environments. Institutional support also exhibited a strong association with teaching adaptability ($r = .57$), suggesting that faculty members who receive adequate organizational, technical, and professional development support are more likely to innovate and adjust their instructional practices in virtual settings. Moderate positive correlations were also observed between teaching adaptability and assessment authenticity ($r = .56$), as well as between assessment authenticity and student motivation ($r = .48$). These findings suggest that when students perceive online assessments as fair, transparent, and professionally relevant, their overall engagement and motivation in virtual courses increase. Collectively, these results highlight the interconnected nature of pedagogical flexibility, institutional readiness, and student-centered factors in shaping effective virtual learning experiences within professional education contexts.

4.3 Regression

To Predict Perceived Virtual Learning Effectiveness (the dependent variable) Using the Five Constructs As Predictors, A Multiple Regression Model Was Used. The Model Was Statistically Significant ($f = 29.84$, $p < .001$), Explaining 64.2% of the Variance ($r^2 = .642$).

Predictor Variable	β Coefficient	t-value	Sig. (p)
Technological Readiness	0.18	3.42	0.001
Teaching Adaptability	0.27	5.36	0
Institutional Support	0.23	4.82	0
Student Motivation & Self-Regulation	0.19	3.66	0.002
Assessment Authenticity	0.12	2.47	0.015

The impact of the most influential predictors of perceived effectiveness for adapting to virtual education is confirmed as a result of the analysis of the data. The results confirm that there is a relationship between the ability to adapt to virtual education and perceived effectiveness. This confirms the theoretical assumption that both the institutional environment and the quality of instruction will be key determinants for the success of virtual education in accounting in universities in Saudi Arabia.

4.4 Analysis of Group Differences

Differences in satisfaction of virtual learning across institutions (public vs. private) were found to be statistically significant according to ANOVA. Students and faculty members in private universities reported greater satisfaction ($M=4.08$) than did their counterparts in public universities ($M=3.71$) ($F[1,310]=8.54$, $p=0.004$). These differences reflect the disparity in resources between the two types of institutions. Private institutions typically have better digital infrastructure, fewer students enrolled per course section and longer histories of using e-learning technology before the COVID-19 pandemic. There were not statistical differences based upon gender; however, females showed slightly higher levels of self-regulation and satisfaction with virtual learning. Similar patterns have been shown in previous research conducted in Saudi Arabia (Al-Ghamdi, 2023).

4.5 Significant Challenges Experienced

Both survey and interview data indicate that multiple recurrent challenges affected the successful delivery of virtual accounting education in universities in Saudi Arabia. A number of common themes were identified consistent with the conceptual model.

4.6 Challenges in Connectivity and Technology:

- 26% of participants mentioned varying degrees of difficulty accessing the internet.
- Faculty located in distant areas reported that they often lost connectivity during live sessions caused by slow bandwidth, thus resulting in reliance on asynchronous video and audio upload.
- One faculty member from Taibah University described this problem as follows:

"From an academic standpoint, we have Blackboard for our virtual classes. However, practically speaking, half of the students lose connectivity to the system during each virtual session."

4.7 Gaps in Engagement and Interactivity:

- 61% of students believed that online lectures lacked engagement.
- Discussion boards were frequently underused; students preferred to listen passively rather than interact actively in their virtual classroom.
- Faculty members also reported that they saw less questions being asked and less collaboration during virtual auditing activities.

4.8 Concerns with Assessment Integrity:

- 54% of faculty members were concerned about assessment integrity when administering exams online despite having used proctoring tools.
- Several institutions switched to project-based assignments, but students raised questions regarding the fairness of the grade distribution process.

A student stated:

"When working in groups, it was very difficult to know how grades were going to be distributed. We also did not feel like online collaboration was always fair."

4.9 Increased Faculty Workload and Lack of Training:

- Approximately 70% of instructors reported an increase in their workload due to preparing digital materials.
- While some universities offered training workshops, attendance varied widely.
- A senior faculty member commented:

"It was a struggle to teach, troubleshoot, and create online educational materials simultaneously – without any clear plan or guidelines."

4.10 Difficulty Maintaining Learning Environment and Self-Regulation:

Students identified difficulty concentrating while studying at home.

- Common distractions included household chores, competing demands for attention, and "zoom fatigue."
- A female student encapsulated her experience:

"I am responsible for what I do in a face-to-face setting. I can easily get distracted or work on something else when taking an online course."

In terms of findings, the study demonstrates that the move to online learning for Saudi accounting students was an educational structure change — not simply a change in how courses are delivered — and that the crisis caused by COVID-19 accelerated these changes and the national reform efforts of Vision 2030 supported the continuation of these changes. While Saudi Universities demonstrated success in establishing a functional online learning environment, the depth of learning was significantly affected by faculty's ability to adjust their teaching styles, the level of institutional support provided to students and faculty, and the ability of students to self regulate their own learning. These findings support the existing body of international literature concerning online learning and are unique to the Saudi context due to its cultural, infrastructure and policy-based differences.

As a pedagogical reorientation, the study supports the Community of Inquiry (CoI) model developed by Garrison et al. (2000) regarding the importance of balancing cognitive, social and teaching presences for effective online learning. Those faculty members who successfully established a strong teaching presence through interactive lectures, providing timely and relevant feedback and connecting course material to real world examples were able to establish stronger student engagement. The quantitative data also showed that faculty adaptability in teaching was the most significant predictor ($\beta = .27$) of perceived learning effectiveness.

This finding further supports constructivist learning theory. When students engage in the active construction of knowledge through problem solving and contextualized engagement, learning outcomes can be both meaningful and achieved through digital environments (Garrison, 2016; Vygotsky, 1978).

Many faculty members began the process of online teaching as a one to one reproduction of the physical classroom — simply converting their lectures into a digital format and uploading them. This approach while technologically efficient did not provide the opportunity for students to interact with peers or deepen their understanding of the course material. One interviewee noted, "we found that virtual teaching was not simply a matter of uploading content — it was about designing the learning experience."

This quote reflects findings made globally by Rapanta et al. (2020) and Hodges et al. (2020), that quality online learning requires purposeful design, rather than a simple technological substitute.

4.11 Institutional Support and Governance: The Policy Dimension

The second major predictor of perceived effectiveness–institutional support–demonstrates how macro-governance relates to micro pedagogy. Institutions which provided regimented professional development, technical support teams, and regular policy support demonstrated higher levels of satisfaction in both students and faculty. This is consistent with international literature, whereby effective digital learning environments in the Australian and U.S. universities was closely correlated with institutional programmers to support the professional development of academic faculty and the use of instructional designers (Watty, 2021; Bates, 2022). In Saudi Arabia, institutional preparedness was shown to vary significantly between public and private institutions. Private institutions such as Prince Sultan and Dar Al-Hekma had the benefit of smaller classes, and pre-existing digital infrastructure, whilst larger public institutions, despite higher levels of funding, suffered from organizational inertia and inconsistencies in staff readiness. From a governance perspective, this difference highlights the importance of top-down digital leadership. Such leadership must be aligned with the educational transformation agenda of Vision 2030. The National eLearning Center (NELC) and the Ministry of Education were of critical importance in normalizing institutional use of platforms (eg Blackboard), giving accreditation for virtual programs and providing system-wide faculty development initiatives. Such policies not only provided for continuity of educational provision during the pandemic but also normalized virtual learning as a long-term educational model.

However, policy initiatives in isolation cannot guarantee success. Furthermore, such policies require that institutional leadership is able to interpret them into concrete, situational-based programmers of support. Faculty interviews revealed that "policies existed on paper but did not consistently have a method for local implementation." Therefore, an important lesson learned is that policy coherence must be married to local implementation in order to sustain educational reform.

4.12 The Human Factor: Involvement, Motivation, and Fatigue

A major theme that recurred in the quantitative and qualitative data collected was the psychological aspect of virtual learning–student motivation, self-regulation, and digital fatigue. While 82% of the student respondents had had previous experience in online courses, only 58% reported motivation through the virtual semesters. This is consistent with Zimmerman's (2002) self-regulated learning theory, namely that online education calls for (emphasizes) even more autonomy, time management, and intrinsic motivation. In Saudi Arabia, these factors were compounded by cultural expectations for teacher-driven instruction and student inexperience with independent learning models. As stated by one student, "In class the teacher forces us to work hard but online you have to force yourself." This output is consistent with studies in similar educational, collectivist cultures (for example, Malaysia, Egypt, and U.A.E.) where self-directed learning styles remain underdeveloped (Ahmad et al., 2021).

The shift nevertheless provided a measure of empowerment to certain groups, especially female students, by providing more and greater participation opportunities. The flexibility of the virtual learning environment mitigated commuting and cultural restraints, which opened wider doors for equitable access to higher education. This output is consistent with Vision 2030's social pillar relative to enhanced female participation in the labor market and professional education. This demonstrates how adapting to technology can drive social inclusion, even when faced with pedagogical obstacles. However, digital fatigue appears as a fault universal to all. Lengthened screen time and lack of human interaction stilled motivation and diminished concentration, consistent with worldwide research by Peper et al. (2021). Technology has blurred the lines between study and relaxation, diluting traditional stimulation and reflection. Educational institutions must prioritize psychological health in

digital learning strategies, ensuring structured breaks, diverse learning avenues, and a focus on mental health.

4.13 Integrity and Authenticity of Assessment Learning

The least favorable factor in the case study under examination, authenticity of assessment, throws insight into one of the more intractable issues of all virtual education, that of fairness and academic integrity. Over half the faculty gave indication that dissatisfaction was prevalent in respect of cheating being carried on in on line examinations, when as a matter of interest, many, if not all, had brought into play examination tactics such as Respondus or Proctor U monitoring techniques. The same tendencies have been reported internationally (Lanier, 2020; Holden et al.. 2022). Indicating somewhat of a far-reaching limitation of abilities of technology to ensure a premium level of integrity. The answer as invocated by a number of academics in Saudi Arabia lies in having a change of slant into the kind of exams, which are made. Rather than have the general run of examinations, which have been customary, a number of the educational group have inserted open book analytical work, project assessments and case studies advances and these find themselves in the principles of authenticity of assessments as given by Wiggins. (1998), which are geared to the principles of application, synthesis and thought on learning, rather than just memory. Such steps to such examination procedures lessen the level of incidence of dishonest work but also have the effect of consideration to educational purposes for the real life situations which students are being prepared for in the accountancy and other faculties. One of the faculty put it eloquently when talking of analyzing the position of financial statements of real companies, “What is the reason for integrated results: it is the individual’s judgment which is important.” The movement in the educational methods is a primary movement to competence based accountancy education by methods of integrated delivery in accordance with IFAC’s (2022) Education Framework, which identified those methods termed by focusing on critical thought, ethics and data based results. Therefore the problem of assessment by means of virtual education is not so much of a technical nature, but one of ideology which needs a thorough reconsideration of what in effect is meant by evidence of learning in a digital world. International Comparison: Saudi Arabia and the International Scene. In comparison with the international trends. Saudi Arabia’s experiences have national differences, but they are largely aligned with the international results. For example, in comparison with universities in Australia (Watty, (2021) and Malaysia (Aziz et al., 2022) and USA (Means et al., 2013), the educational institutions in Saudi entered largely into the acceptance of hybrid solutions and thus quickly adapted themselves to the new situation. However, in the instance of Saudi Arabia, government edict was largely played out as the methods of digital expansion and the cultural change which were introduced.

4.14 Building a Hybrid Future: Lessons Learned

Overall, the collective evidence points toward a hybrid educational future — one that blends the flexibility of online delivery with the relational dimensions of face-to-face delivery. Both faculty and students were optimistic that blended delivery will be the ideal long-term model. These views are aligned with UNESCO (2023) and the World Bank (2022), which advocate for a post-pandemic higher education recovery model based on adaptability, inclusion and lifelong learning.

A hybrid future for Saudi accounting programs involves a number of actionable steps:

Curriculum Redesign: Incorporate digital accounting tools (SAP, Power BI, QuickBooks etc.) into the learning objectives of courses, and make course work relevant to the accounting profession.

- Faculty Development: Develop national-level training programs through the NELC to develop digital pedagogy skills and instructional design capabilities among faculty.
- Digital Literacy Orientation: Provide first year accounting students with orientation modules on how to learn and manage their own time.
- Reforming Assessment Practices: Transition from static assessments such as multiple choice exams to authentic assessments (project based) that require students to apply critical thinking and judgment (ethics).
- Using Data to Make Decisions: Monitor student engagement, provide personalized learning experiences, and identify students who may be struggling early in the semester through data collected from the LMS.

By implementing these steps, Saudi universities can create a sustainable model of virtual accounting education while positioning themselves as leaders in digitally enabled business education throughout the Arab world.

5. THEORETICAL AND PRACTICAL IMPLICATIONS

This study theoretically extends the Community of Inquiry and Technology Acceptance Model by demonstrating the applicability of both models in an emerging economy in the context of a policy shift. The study demonstrates that teaching presence and institutional readiness are complementary aspects of virtual learning effectiveness.

- Practically, the study identifies a set of practical solutions for three types of stakeholders. These findings are consistent with international accreditation standards that emphasize digital competency and assurance of learning in business education (AACSB, 2020).
- Educators: need to transition from being content transmitters to facilitating cognitive engagement among learners.
- Administrators: need to concentrate on creating integrated digital systems that combine technical capability with pedagogical support.
- Policymakers: need to create frameworks for digital education that remain flexible so that universities can innovate while working within national guidelines.

In essence, the study suggests that virtual learning in Saudi Arabia was successful because of alignment — alignment of pedagogy, policy, and adaptability among humans.

6. REFLECTION AND CONCLUSION

Virtual learning has transformed the educational landscape for accounting education in Saudi Arabia. It has accelerated innovation in pedagogy, increased accessibility, and changed the nature of relationships between faculty and students. At the same time, it has created structural barriers, uneven readiness, assessment challenges, and digital fatigue that need to be overcome to build on the successes achieved to date.

More importantly, this transformation represents a movement in educational philosophy beyond just a response to crisis and the lessons learned from virtual learning are a guidepost for Saudi universities as they move forward with the vision for a digital future outlined in Vision 2030.

7. IMPLICATIONS FOR POLICY AND PEDAGOGY

The success of virtual accounting education in Saudi Arabia depends on alignment of pedagogical design, institutional strategic planning, and national digital transformation policies. To promote and sustain virtual learning, policymakers and educators should develop a national framework for hybrid education, fund upgrades of digital infrastructure in regional universities using long-term funding mechanisms, and integrate standards for faculty and students' digital competency into accreditation criteria. These recommendations are aligned with national quality assurance standards set by the National Center for Academic Accreditation and Evaluation (NCAAA, 2021).This will enable virtual learning to transition from an emergency practice to a permanent component of higher education governance, ensuring its institutionalization and sustainability.

7.1 Faculty Development & Digital Pedagogy Certification

According to research, institutional support & faculty ability to teach differently is the most important factor in successfully transitioning to virtual education. Therefore, national government entities must establish formalized faculty development programs in digital pedagogy. The National Electronics Laboratory Center (NELC) along with the Saudi Association for Accounting & Auditing (SOCPA) could develop a Digital Pedagogy Certification for Accounting Educators; the certification will focus on instructional design, online interactions, and innovative assessments. The certification will be used as a professional credential and as a means of ensuring national teaching standards. Additionally, connecting these certifications to the promotion of faculty members will encourage participation and improve the quality of instruction at all universities.

7.2 Data-Driven Policy and Ongoing Assessment

The NELC and Ministry of Education should use a data-driven approach to evaluate the effectiveness of learning across institutions. Utilizing learning analytics from national Learning Management System (LMS) platforms, educators can continually assess the effectiveness of student engagement, drop-out rates, and knowledge/skill acquisition. As noted above, this type of policymaking based upon evidence supports Vision 2030's goal of increasing transparency and accountability within public institutions, including those providing higher education.

7.3 University Strategy and Leadership

To successfully transition to digital pedagogy, universities must foster a culture that encourages innovation, flexibility, and continuous improvement. This can be achieved through the development of Faculty-Led

Innovation Hubs, Digital Learning Excellence Centers (DLEC), and recognition of innovative teaching methods. To ensure equal access to education, universities should establish laptop and internet access programs for students with financial constraints, develop course materials for low bandwidth and mobile devices, and develop asynchronous learning modules for students who balance family and work obligations. Academic integrity systems must be strengthened, with universities transitioning from surveillance-based proctoring to integrity-by-design systems. Pedagogical and curricular innovation should include reorganizing accounting programs for hybrid delivery modes, incorporating digital platforms like SAP, Power BI, QuickBooks Online, and audit analytics software into course outcomes. Promoting self-directed and life-long learning is crucial for students to transition from dependency on teachers to becoming autonomous learners. Universities should develop metacognitive learning activities, first-year orientation programs, and first-year orientation programs that focus on digital literacy, time management, and self-directed learning strategies. A sustainable digital future for Saudi universities requires a "review – reflect – redesign" cycle for all virtual courses, annual assessment of learning outcomes, and partnerships between universities, industries, and professional associations. Virtual learning must remain human-centered, fostering empathy, connection, and purpose in the learning experience.

8. CONCLUSION

Virtual learning has dramatically transformed the environment for accounting education, not just nationally in Saudi Arabia, but worldwide. This study examined how this rapid transition affected the design, delivery, and perceptions of accounting courses at the various universities in Saudi Arabia. Through a combination of quantitative and qualitative data, the study provided a detailed view of the opportunities and challenges that developed as professors and students began to use digital learning systems, which were part of a larger structure of Saudi Arabia's Vision 2030.

The results demonstrated that the success of virtual learning in accounting rested on three related factors: the ability of teachers to adapt to the new platform, the degree of institutional support and the ability of students to regulate themselves. Professors who redesigned their teaching practices to focus on interaction, case studies and simulations received significantly greater levels of engagement and satisfaction from their students than those who did not make similar changes. Similarly, the universities that committed to investing in the digital infrastructure, training and technical support necessary to facilitate pedagogical innovation provided the base for innovation. Nonetheless, the motivation and self-regulatory behaviors of students remained highly variable — suggesting that mentoring and developing a learning culture would remain vital components of learning in digital environments.

One of the most significant implications of this study is that virtual learning has advanced beyond being a crisis management tool. It has developed into a strategic tool of educational reform aligned with national objectives to develop digital transformation, inclusion and human capital development. In the Saudi context, virtual education has not only made learning available to more people, it has increased social progress in two ways — increasing the number of women participating in education and creating flexible lifelong learning pathways. The latter indicates that digital transformation in education is both a pedagogical and societal accomplishment.

However, there are many continued challenges in digital education. There are still issues with assessing the authenticity of assessments, digital fatigue and inequality of access to digital learning that limit the effectiveness of digital learning, especially in technical and ethics-related fields such as accounting. Although some of the challenges may be mitigated with the application of technologies such as AI-enabled proctoring and analytics tools, the underlying challenge is pedagogical innovation — moving from traditional standardized testing methods to authentic problem-solving assessments that reflect the nature of accounting practice in the world today. Such a transition requires universities and policymakers to realize that educational integrity is not maintained through surveillance but through design, trust and relevance.

In terms of theoretical contributions, this study further validated the Community of Inquiry (CoI) model and the theory of self-regulated learning in explaining the nature of digital education in emerging economies. Additionally, the study extended these theories by demonstrating that institutional policy — often overlooked in models developed in Western countries — plays a critical role in developing teaching presence and student engagement. The interaction between national digital policy (Vision 2030) and classroom-level practices created a unique model of transformation in Saudi Arabia — a top-down reform that required bottom-up creativity to be implemented successfully.

This study also adds to the literature on accounting education by providing one of the few empirical investigations of virtual learning in the Arab region. It serves as an empirical basis for educators and administrators seeking to combine digital learning with professional competences outlined by international accounting bodies (such as IFAC and AACSB). By relating pedagogical innovation to global professional standards, Saudi universities can position themselves as regional leaders in digitally enabled business education.

Universities will have to continue their momentum toward achieving its Vision 2030 objectives by using blended learning models, which incorporate both flexibility and interaction, as well as technology and humanity. Universities face a significant opportunity in how they design a new paradigm for education—where virtual learning can be a bridge of excellence in technical aspects and humanity in developing people.

REFERENCES

AACSB International. (2020). *2020 business accreditation standards*. AACSB.

AERA. (2011). *Code of ethics*. American Educational Research Association.

Al-Ghamdi, S. (2022). University students' readiness for online learning in Saudi Arabia: Post-pandemic reflections. *Education and Information Technologies, 27*(10), 13759–13780. https://doi.org/10.1007/s10639-022-11278-1

Al-Ghamdi, S. (2023). Engagement strategies in synchronous online classes: Evidence from Saudi higher education. *Journal of Computing in Higher Education, 35*(1), 1–26. https://doi.org/10.1007/s12528-022-09333-1

Alharbi, M., & Ahmed, S. (2023). *The impact of virtual learning on accounting education outcomes in Saudi universities: An empirical study*. Journal of Accounting Education and Research, 45(2), 112–128.

Al-Lily, A. E., Ismail, A. F., Abunasser, F. M., & Alqahtani, R. H. A. (2020). Distance education as a response to pandemics: Coronavirus and Arab culture. *Technology in Society, 63*, 101317. https://doi.org/10.1016/j.techsoc.2020.101317

Alenezi, A. (2022). Faculty perceptions of e-learning effectiveness during COVID-19 in Saudi universities. *International Journal of Educational Research Open, 3*, 100147. https://doi.org/10.1016/j.ijedro.2021.100147

Almahdi, A., & Alnasser, A. (2022). Predictors of successful e-learning in Gulf universities: The role of institutional support. *Education and Information Technologies, 27*(7), 9239–9261. https://doi.org/10.1007/s10639-021-10888-0

Almaiah, M. A., Al-Khasawneh, A., & Althunibat, A. (2020). Exploring the critical challenges and factors influencing the e-learning system usage during COVID-19 pandemic. *Education and Information Technologies, 25*, 5261–5280. https://doi.org/10.1007/s10639-020-10219-y

Alqahtani, A., & Al-Mudimigh, A. (2021). E-learning challenges in Saudi higher education during COVID-19. *International Journal of Advanced Computer Science and Applications, 12*(5), 613–620. https://doi.org/10.14569/IJACSA.2021.0120571

Alqahtani, A. Y., & Rajkhan, A. A. (2020). E-learning in Saudi higher education during the COVID-19 pandemic: A case study. *Journal of Student Research, 9*(3), 1–9.

Al-Shehri, M. (2021). Digital transformation in Saudi higher education post-COVID-19: Opportunities and challenges. *Education and Information Technologies, 26*(6), 7605–7627. https://doi.org/10.1007/s10639-021-10729-2

Alshammari, S., Alharbi, A., & Alqahtani, N. (2023). Public versus private universities' readiness for online learning in Saudi Arabia: A comparative analysis. *Education and Information Technologies, 28*(2), 2173–2193. https://doi.org/10.1007/s10639-022-11112-8

Anderson, T. (Ed.). (2008). *The theory and practice of online learning* (2nd ed.). Athabasca University Press.

Apostolou, B., Dorminey, J., Hassell, J. M., & Rebele, J. E. (2017). Accounting education literature review (2016–2017). *Journal of Accounting Education, 39*, 1–31. https://doi.org/10.1016/j.jaccedu.2017.09.001

Apostolou, B., Hassell, J. M., Rebele, J. E., & Watson, S. F. (2020). Accounting education literature review (2018–2019). *Journal of Accounting Education, 51*, 100683. https://doi.org/10.1016/j.jaccedu.2020.100683

Artino, A. R. (2010). Online learning motivation: An exploratory analysis of the role of self-regulated learning. *Internet and Higher Education, 13*(4), 146–155. https://doi.org/10.1016/j.iheduc.2010.04.001

Aziz, A. A., Ahmad, N., & Ismail, S. (2022). Business education during the pandemic: Lessons from Malaysian universities. *Studies in Higher Education, 47*(9), 1786–1801. https://doi.org/10.1080/03075079.2021.1961903

Bates, T. (2019). *Teaching in a digital age* (2nd ed.). BCcampus. https://opentextbc.ca/teachinginadigitalage

Bates, T. (2022). Post-pandemic priorities for online and blended learning. *Online Learning, 26*(2), 1–22. https://doi.org/10.24059/olj.v26i2.3092

Bernard, R. M., Borokhovski, E., Schmid, R. F., Tamim, R. M., & Abrami, P. C. (2014). A meta-analysis of blended learning and technology use in higher education. *Computers & Education, 72*, 217–227. https://doi.org/10.1016/j.compedu.2013.12.005

Bliuc, A.-M., Ellis, R. A., Goodyear, P., & Piggott, L. (2019). Learning through discussions in online contexts: A systematic review. *Educational Research Review, 28*, 100286. https://doi.org/10.1016/j.edurev.2019.100286

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp0630a

Byrne, M., & Flood, B. (2008). Examining the relationships among background variables and academic performance of first-year accounting students at an Irish university. *Journal of Accounting Education, 26*(4), 202–212. https://doi.org/10.1016/j.jaccedu.2009.02.001

Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340. https://doi.org/10.2307/249008

Garrison, D. R. (2016). *E-learning in the 21st century* (3rd ed.). Routledge.

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education, 2*(2–3), 87–105. https://doi.org/10.1016/S1096-7516(00)00016-6

Garrison, D. R., & Vaughan, N. D. (2013). *Blended learning in higher education*. Jossey-Bass.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage.

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. *EDUCAUSE Review*. https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning

Holden, O., Norris, M., & Kuhlmeier, V. A. (2022). Academic integrity in remote exams: A systematic review. *Assessment & Evaluation in Higher Education, 47*(8), 1246–1263. https://doi.org/10.1080/02602938.2021.2014949

IFAC. (2022). *International Education Standards (IES) for professional accountants and aspiring professional accountants*. International Federation of Accountants. https://www.ifac.org

Ifenthaler, D., & Yau, J. Y. K. (2020). Utilising learning analytics for study success: Reflections on current empirical findings. *International Journal of Learning Analytics and Artificial Intelligence for Education, 2*(1), 50–63.

Jackling, B., & De Lange, P. (2009). Do accounting graduates' skills meet the expectations of employers? A matter of convergence or divergence. *Accounting Education, 18*(4–5), 369–385. https://doi.org/10.1080/09639280902719341

Lanier, M. (2020). Academic integrity and assessment in online learning. *Journal of Academic Ethics, 18*(4), 347–361. https://doi.org/10.1007/s10805-020-09338-z

Marriott, P., & Marriott, N. (2003). Are we turning them on? A longitudinal study of undergraduate accounting students' attitudes towards accounting as a profession. *Accounting Education, 12*(2), 113–133. https://doi.org/10.1080/0963928032000088836

Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2013). *The effectiveness of online and blended learning: A meta-analysis*. U.S. Department of Education. https://www2.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf

Ministry of Education (Saudi Arabia). (2022). *National digital education strategy*. MoE.

National Center for Academic Accreditation and Evaluation (NCAAA). (2021). *Quality standards for programs and institutions*. Education & Training Evaluation Commission (ETEC).

National eLearning Center (Saudi Arabia). (2023). *Annual report on eLearning quality and accreditation*. NELC.

Pan, P. L., & Perera, H. (2012). Market relevance of university accounting programs: Evidence from Australia. *Accounting Education, 21*(5), 465–494. https://doi.org/10.1080/09639284.2011.602917

Peper, E., Wilson, V., Martin, M., Rosegard, E., & Harvey, R. (2021). Avoid Zoom fatigue, be present and learn. *NeuroRegulation, 8*(1), 47–56. https://doi.org/10.15540/nr.8.1.47

Piaget, J. (1985). *The equilibration of cognitive structures*. University of Chicago Press.

Rapanta, C., Botturi, L., Goodyear, P., Guàrdia, L., & Koole, M. (2020). Online university teaching during and after the COVID-19 crisis: Refocusing teacher presence and learning activity. *Postdigital Science and Education, 2*, 923–945. https://doi.org/10.1007/s42438-020-00155-y

Saudi Vision 2030. (2016). *Vision 2030 Kingdom of Saudi Arabia*. https://www.vision2030.gov.sa

Siemens, G. (2005). Connectivism: A learning theory for the digital age. *International Journal of Instructional Technology and Distance Learning, 2*(1), 3–10.

SOCPA (Saudi Organization for Chartered and Professional Accountants). (2020). *Learning outcomes framework for accounting programs in Saudi Arabia*. SOCPA.

Tan, L. M., & Laswad, F. (2018). Flipped classrooms in accounting education: A review and future directions. *Accounting Education, 27*(4), 329–345. https://doi.org/10.1080/09639284.2018.1496848

Tempelaar, D., Rienties, B., & Giesbers, B. (2017). Personality, motivation, and inhibitory control in online learning. *Computers in Human Behavior, 77*, 229–236. https://doi.org/10.1016/j.chb.2017.09.012

UNESCO. (2023). *Education in a post-COVID world: Nine ideas for public action*. UNESCO. https://unesdoc.unesco.org

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

Waggoner, C., & Doran, B. (2021). Remote proctoring in business education: Lessons learned. *Journal of Education for Business, 96*(6), 343–350. https://doi.org/10.1080/08832323.2020.1833046

Watty, K. (2021). Digital disruption and the future of accounting education. *Accounting Education, 30*(6), 593–599. https://doi.org/10.1080/09639284.2021.1985864

Watty, K., De Lange, P., & Carr, R. (2016). Changes in accounting education: A review of learning outcomes and competencies. *Accounting Education, 25*(5), 433–452. https://doi.org/10.1080/09639284.2016.1213945

Wells, P., Gerbic, P., Kranenburg, I., & Bygrave, J. (2009). Professional skills and capabilities of accounting graduates: The New Zealand expectation gap? *Accounting Education, 18*(4–5), 403–420. https://doi.org/10.1080/09639280902719390

Wiggins, G. (1998). *Educative assessment: Designing assessments to inform and improve student performance*. Jossey-Bass.

Bryant, J., Kahle, J. B., & Schafer, B. (2020). *Online and blended learning effectiveness in U.S. higher education: A comparative study*. Journal of Educational Technology Systems, 49(1), 25–45

World Bank. (2022). *The COVID-19 pandemic: Shocks to education and policy responses*. World Bank. https://www.worldbank.org/en/topic/education/brief/education-and-covid-19

Zawacki-Richter, O., & Naidu, S. (2016). Mapping research trends in distance education. *International Review of Research in Open and Distributed Learning, 17*(3), 161–181. https://doi.org/10.19173/irrodl.v17i3.2448

Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory Into Practice, 41*(2), 64–70. https://doi.org/10.1207/s15430421tip4102_2