

Audit simulation and learning styles: Enhancing students' experiential learning and performance at a MENA university

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Drawing on experiential learning theory (ELT), this study (1) explores students' perceived benefits of experiencing different learning styles through an audit simulation (AS) assignment and (2) analyses its role in enhancing students' performance at a Middle East and North Africa (MENA) university. The study compares students' performance across two different periods, 2019 and 2022, with 46 and 48 participants, respectively, independently completing a questionnaire of six open-ended questions paired with follow-up feedback, the instructor's observations and the analyses of students' grades. Our study findings indicate that the AS assignment enabled students to effectively experience different learning styles at different times during the AS learning process. They visualised an authentic AS experience by critically analysing and practically evaluating AS documents while showing strong preferences for initiating new experiences. It also reveals an improvement in students' grades after the AS implementation. Our study has theoretical implications relating to cognitive and constructivist learning, learning transfer and ethics awareness, as well as practical implications in audit education, skill development, teamwork, professional development, auditors' evaluation and curriculum assessment in other disciplines than auditing.

KEYWORDS

accounting education, action research, audit simulation, case study, experiential learning, learning styles, MENA

1 | INTRODUCTION

Students have commonly perceived audit as a complex discipline to study and, thereafter, to choose as a career path. Indeed, audit involves many job responsibilities, such as understanding the client's operations, assessing risk, gathering evidence, performing the required substantive procedures, detecting errors and evaluating the materiality of misstatements. Although passive teaching methods (e.g., lectures and assigned readings), which are generally concept-oriented, are normally utilised to teach audit topics, more active teaching methods are needed (Chiang et al., 2021; Helliar et al., 2009; O'Leary & Stewart, 2013) to enable students to experience and comprehend the complexities inherited in the audit discipline and processes. In fact,

active teaching methods (e.g., physical/computer simulation, case study and field trip) enable students to apply what they have learned to real-world issues and, therefore, are needed (Gittings et al., 2020) for preparing students for a real audit environment.

Prior literature documents several criticisms against the audit passive teaching approach in classrooms and calls for change (Barkman, 1998; Helliar et al., 2009; Massey et al., 2002; Siegel et al., 1997; Steenkamp & Rudman, 2007). Hence, audit simulation (AS) emerged as a valuable teaching instrument and learning activity that brings actual workplaces to the classroom (De Aquino et al., 2005), encourages active learning (Sugahara & Dellaportas, 2018), develops professional and soft skills (Levant et al., 2016; Steenkamp & Rudman, 2007), and enhances knowledge through in-depth learning

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(Kruger, 2011). Though insightful, prior AS studies mainly focused on assessing students' (learners') perceptions of the AS usefulness measured by Likert-scale questionnaires (e.g., Edmonds et al., 2019; Elsayed et al., 2023; Saadullah & Elsayed, 2020; Zelin, 2010), yet ignored how the utilisation of AS provides students with opportunities to improve their learning styles, which consequently enhances their performance. Prior studies document the benefits of using AS in teaching compared to the passive teaching approach (Bruton & Bradley, 1992; Clikeman, 2012; Levant et al., 2016); however, the students' perceived benefits of experiencing different learning styles through the utilisation of AS and hence the improvement in their performance remain unresolved research questions. Our study addresses these questions and explores the improvement in students' performance when they experience AS while informing the analysis of findings from Kolb's framework of learning styles.

Learning styles reflect individual cognitive, emotional and physiological behaviours (O'Leary & Stewart, 2013). As Loo (2002, p. 252) describes, learning style is 'the consistent way in which a learner responds to or interacts with stimuli in the learning context'. Learning styles, therefore, reveal how learners perceive, interact with and react to the learning environment with their unique and consistent preferences for conceiving, processing, performing and retaining information, consistent with Kolb and Kolb's (2013) four different learning styles (i.e., diverging, assimilating, converging and accommodating). Our study integrates Kolb's learning styles in an AS-based learning context to reveal how learners' performance is improved, which is unexplored by prior studies. Prior studies rely on Kolb's framework, mainly to explore the students' learning modes (Kolb, 1981, 1984; Kolb et al., 2001), develop theoretical concepts related to learning styles (Kolb & Kolb, 2005, 2013), and investigate students' learning preferences through surveys or reporting the frequency of embedding the learning styles (Loo, 2002, 2004; O'Leary & Stewart, 2013; Verna, 2020). In addition, our context—a university located in an Arabic-speaking country—complements the AS literature because the majority of prior studies were carried out in Anglo-American universities, except for Elsayed et al. (2023) and Saadullah and Elsayed (2020) studies, which did not underscore the students' learning styles as our study does.

Our study, therefore, addresses the above research gaps and expands on prior AS studies. It documents how the students' perceived benefits evolved through their utilisation of the AS. Although it shares with Elsayed et al. (2023), Chiang et al. (2021) and Siegel et al. (1997) the application of experiential learning theory (ELT) to improve audit teaching, it moves forward to examine the students' perceived benefits of experiencing different learning styles through an AS assignment while articulating students' learning processes to their performance in an Arabic-speaking context. To achieve our study objectives, we posit the following research questions: How were learning styles—diverging, assimilating, converging and accommodating—perceived by students through the AS assignment? Does the adoption of AS improve students' performance? To answer these research questions, we rely on a case study approach. Data are collected by analysing students' responses (post-AS assignment) to open-ended questions, the instructor's observations, following up feedback meetings and students' grades from two samples of students enrolled in an

advanced undergraduate auditing course across two different periods, 2019 and 2022, at a Middle East and North Africa (MENA) university.

Because AS bears the characteristics of experiential learning (Alshurafat et al., 2020; Chiang et al., 2021; Elsayed et al., 2023; Gittings et al., 2020; Morris, 2020; Ranchhod et al., 2014), the use of ELT to inform our case study analysis seems appropriate. ELT concepts (explained in Section 3) of concrete experience (CE), reflective observation (RO), abstract conceptualisation (AC) and active experimentation (AE) enable to reveal the students' cognitive abilities and competencies as well as explore their learning styles (i.e., diverging, assimilating, converging and accommodating). Hence, the use of ELT, with specific reference to audit discipline, illuminates the students' perceived benefits of using simulations in teaching auditing and how AS contributes to improving students' performance.

Our study, therefore, contributes to the prior AS literature in four important ways. First, it explores students' perceived benefits of experiencing different learning styles through AS, an objective that is ignored, or at least under-researched, by the extant literature in AS. In this regard, we extend Saadullah and Elsayed's (2020) work, which just discussed the development of AS interment, by showing accounting educators how learning styles are perceived by students through the AS assignment. Second, we add to AS-based experiential learning studies (e.g., Chiang et al., 2021; Elsayed et al., 2023; Siegel et al., 1997) because we provide evidence of students' perceived benefits of experiencing different learning styles through AS, instead of just discussing the content of AS assignments and how they helped students understand what happens inside an audit workplace. Third, our study is a pioneer in using an action research (AR) methodological endeavour supported by an interpretive case study approach and a mixed-methods design to capture how students perceive the benefits of experiencing different learning styles through an AS assignment and how students' performance is enhanced. Fourth, our case study investigation exists in an Arabic-speaking country. This significantly adds to the AS prior studies, which were mainly performed in English-speaking countries. Our study provides a complete account, description and evidence of whether students' perceived benefits from an AS in an Arabic-speaking university are similar to those perceived in English-speaking universities.

The remainder of this paper is organised as follows. Section 2 explores the AS literature. Section 3 highlights the theoretical perspective, based predominantly on experiential learning. Section 4 presents a description of the research methodology, including a description of the simulation and the procedures that were used to address the research question. The research findings are theoretically interpreted in Section 5. Section 6 provides discussion and conclusions, while Section 7 highlights theoretical and practical implications, along with limitations and suggestions for future research.

2 | LITERATURE REVIEW

Since the 1970s, there has been a call for change in audit teaching methodology in higher education (Bruton & Bradley, 1992). This call is evident in a significant number of audit studies (e.g., Barkman, 1998;

Helliar et al., 2009; Massey et al., 2002; Siegel et al., 1997; Steenkamp & Rudman, 2007) highlighting the criticisms that educational institutions are failing to appropriately equip their audit graduates with the tactics and techniques needed to join the profession. Industry demands and professional accounting bodies (Connell et al., 2015) have further propelled these multiple calls for change and called for using active learning activities in audit teaching, such as simulations.

Simulation, and AS is no exception, is a method for active learning because it simulates real workplaces in classrooms: As Ranchhod et al. (2014, p. 76) state, 'simulation is a simplified model of reality structured as a system, which includes clearly specified variables and dynamic relationships between these variables'. AS emphasises learning through practice (De Villiers, 2016), given that there is no universal list of procedures for how to perform auditing (Bruton & Bradley, 1992). Compared to the passive teaching approach, the AS approach facilitates students' understanding of the underlying fundamentals of auditing processes (Levant et al., 2016) and, at the same time, saves instructors classroom time to comprehensively cover auditing procedures (Clikeman, 2012). Simulation, therefore, is characterised as a dynamic and interactive learning process that realistically represents a real-world system and allows the hands-on practice of skills while increasing autonomy and competency (De Villiers, 2016).

AS has been the subject of substantial academic research in accounting education for the past two decades. These years have witnessed increased changes in audit teaching methodology to enhance students' audit knowledge through incorporating active practices and equip them with professional skills and ethical values (e.g., Clikeman, 2012; Steenkamp & Rudman, 2007; Williams & Kollar, 2009) through instructional materials (Apostolou et al., 2017). For instance, Borthick and Curtis (2008) aimed to design an AS to test management assertions of a corporate inventory process and found that this simulation enabled students to improve their ability to verify the internal consistency of data and detect risk conditions. Van der Merwe (2013) contributed by producing a business simulation of the response process to clients' queries and revealed that the benefits gained from its adoption were exposure to actual accounting practice and improvement of students' professional skills.

Similarly, Elsayed et al. (2023) designed a mini-AS on the purchase and cash disbursement processes to examine students' perceptions and progress and documented significant improvements in students' comprehension of audit topics and performance. Saadullah and Elsayed (2020) created a simulation project on the revenue cycle to assist students in understanding how to practice audits, and the questionnaire results articulated that the students had no issues regarding the AS length, lack of instructions' clarity and stress in completing the simulation project. Schatzel (2011) produced a simulation on internal control evaluation and revealed that this simulation improved students' understandability, high-order thinking and interviewing skills. Zelin (2010) investigated the effectiveness of utilising AS on different audit processes in classrooms and concluded that it was supportive in comprehending the tasks that an auditor performs.

Likewise, Steenkamp and Rudman (2007) developed an AS of the whole auditing process from client acceptance to completion and

found students' responses were positive in perceiving improved comprehension of audit information. Bautista-Mesa et al. (2018) provided a set of case studies with different International Financial Reporting Standards (IFRS) to simulate audit workplaces and concluded that students' awareness of competencies (such as technical accounting knowledge, teamwork and communication skills) was significantly enhanced. Williams and Kollar (2009) utilised an auditing case developed by PricewaterhouseCoopers, and the survey outcomes showed an improvement in students' understanding of audit concepts and interpersonal skills. Edmonds et al. (2019) surveyed audit students about an AS of the accounts receivable confirmation process and revealed that students agreed their knowledge had increased through utilising the simulation tool. AS, therefore, has been viewed as effectively encouraging students to enhance their in-depth learning by reflecting on the reality of the actual audit work environment.

Table 1 provides a comprehensive review and summary of these prior AS studies in terms of AS aspect(s), theoretical framing, method(s) of data analysis, the context of AS adoption and the benefits of using AS. Table 1 highlights that AS studies tend to different individual aspects of external audit duties rather than addressing a complete audit process. They explore students' opinions, measured by Likert-scale questionnaires (e.g., Edmonds et al., 2019; Elsayed et al., 2023; Saadullah & Elsayed, 2020; Zelin, 2010), to broadly assess the learners' perceptions of the AS and its usefulness for learning. However, they did not discuss how learning styles are perceived by students through the AS and whether the AS enhances students' performance in understanding and comprehending audit subjects.

Our study, therefore, addresses this gap and brings to the fore the students' experience of utilising AS by exploring students' perceived benefits of experiencing different learning styles while analysing AS's role in enhancing their performance. Although our study shares with Elsayed et al. (2023), Chiang et al. (2021) and Siegel et al. (1997) the application of ELT to improve audit teaching, it goes beyond their narrow focus that only examines how students became active learners through the completion of an audit assessment. Our study documents students' perceived benefits of experiencing different learning styles through an AS assignment while articulating students' learning processes.

3 | THEORETICAL FRAMING

This study uses ELT to explore students' perceived benefits of experiencing different learning styles through an AS assignment. Kolb (1984) is the most broadly accepted learning model, which has received substantial academic support (Alshurafat et al., 2020; Bruton & Bradley, 1992; McCarthy, 2010; Morris, 2020) and is widely employed in a variety of educational settings (Gittings et al., 2020).

ELT has four dynamic modes of learning; each mode is the basis for the subsequent one, as illustrated by Kolb (1984) in Figure 1 and further explained in the literature (cf. Butler et al., 2019; Morris, 2020). Referring to the audit discipline, CE stresses that audit students get the feeling of the experience through a simulated work

TABLE 1 Summary of teaching-based AS articles.

Author(s) and year	AS aspect(s)	Theoretical framing	Data analysis method(s)	Geographical location	Benefits of using AS
Bautista-Mesa et al. (2018)	Control evaluation	Competence-based framework	Quantitative method	Spain	The AS enhances students' understanding of technical accounting concepts and strengthens their abilities in effective communication.
Borthick and Curtis (2008)	Inventory	Theory of situation models	-	The United States	The AS boosts student productivity, fosters analytical abilities and provides aspiring auditors with the opportunity to gain practical auditing experience.
Chiang et al. (2021)	The entire audit process	Experiential learning	Qualitative method	New Zealand	Students actively engaged throughout all four phases of the experiential learning cycle.
Clikeman (2012)	Inventory	-	Quantitative method	The United States	Students' grasp of inventory testing substantive procedures and error detection showed improvement.
Edmonds et al. (2019)	Accounts receivable	-	Quantitative method	The United States	The AS elevates students' discussions on the covered subjects and offers them a practical setting for honing their audit skills.
Elsayed et al. (2023)	Purchase and cash cycles	Experiential learning	Mixed methods	MENA	Student involvement, active participation and positive acknowledgement of the value of AS were sustained.
Massey et al. (2002)	Corporate assets	Cooperative learning	Mixed methods	The United States	Students were actively involved, and they well received the cooperative learning aspects of AS.
Miller and Savage (2009)	Revenue cycle	Bloom taxonomy	Quantitative method	The United States	The AS served as an interactive learning experience that not only aided students in comprehending audit principles but also continued to benefit them once they entered the workforce at auditing firms.
Saadullah and Elsayed (2020)	Revenue cycle	Bloom taxonomy	Quantitative method	MENA	Students acquired practical experience when conducting substantive procedures for error detection.
Savage et al. (2008)	Control evaluation	-	Basic statistics	The United States	The movie case enabled students to engage in a critical analysis of the downfall of a reputable financial corporation.
Schatzel (2011)	Control evaluation	-	Mixed methods	The United States	The AS aided students in enhancing their comprehension, interviewing capabilities and advanced cognitive abilities.
Siegel et al. (1997)	Control evaluation	Experiential learning	Basic statistics	The United States	Through a sequence of videotapes, students gained a genuine sense of the actual occurrences during an audit.
Steenkamp and Rudman (2007)	The entire audit process	-	Quantitative method	South Africa	Students had honed their abilities to interpret and condense data, and they had strengthened their proficiency in using information technology.
Swanger and Jones (2012)	The entire audit process	-	Mixed methods	The United States	Students had their accounting abilities revitalised and were enabled to apply organisational, communication and teamwork aptitudes.
Van der Merwe (2013)	Responding to clients' queries	-	Quantitative method	South Africa	Students were observed to make progress in diverse professional skills.

TABLE 1 (Continued)

Author(s) and year	AS aspect(s)	Theoretical framing	Data analysis method(s)	Geographical location	Benefits of using AS
Williams and Kollar (2009)	Control evaluation	-	Mixed methods	The United States	Students' grasp of course concepts and their interpersonal skills showed signs of improvement.
Worrell (2010)	Procurement process	-	Mixed methods	The United States	The AS holds value not just in boosting marketable skills but also in helping to ignite enthusiasm for a career in auditing.
Zelin (2010)	The entire audit process	-	Quantitative method	The United States	The AS experience proved both engaging and beneficial for gaining insight into the responsibilities undertaken by auditors.

Abbreviations: AS, audit simulation; MENA, Middle East and North Africa.

environment and participate to find meaning in that experience, utilising the general information and theoretical underpinnings of auditing in terms of concepts and procedures. This forms the basis for RO, through which the students' participation creates a learning base by connecting the simulated experience with audit ideas to assimilate the work environment and exploring analytical models and/or observing others performing the simulation-based experience. AC is then shaped by their structured involvement in the experience; hence, they use critical and analytical thinking to draw new implications of action once they have integrated what they have perceived and/or observed with the audit concepts and theories. Audit students consequently gain further comprehension of audit information. These implications shape the students' AE, utilising audit concepts and theories to make decisions and actions by actively examining the accounting reports and supporting documents of the simulation-based experience.

Experiential learning activities like AS enable not only learners to increase their cognitive abilities and competencies but also instructors to explore their students' learning styles. Learning style is 'the consistent way in which a learner responds to or interacts with stimuli in the learning context' (Loo, 2002, p. 252). Although all four modes are part of the learning process, Kolb et al. (2001) argue that there are two modes of learner capabilities to grasp the AS experience (CE and AC), which represent the perceiving dimension, and another two modes of learner competencies to transform that experience into students' cognition (RO and AE), which represent the processing dimension. The perceiving dimension indicates the extent to which a learner focuses on abstractness over concreteness, while the processing dimension demonstrates the extent to which a learner focuses on action over reflection (Manolis et al., 2013). Kolb and Kolb (2013) explained that it is practically impossible to combine these four modes of learning because students have different preferences in learning, and thus, some may choose between CE and AC for perceiving the AS, while others choose between RO and AE for processing the AS. Therefore, diverging (CE/RO), assimilating (AC/RO), converging (AC/AE) and accommodating (CE/AE) are the four resulting learning styles, as shown in Figure 1.

Students with diverging learning styles are best at visualising a CE and then looking at this experience from many points of view to

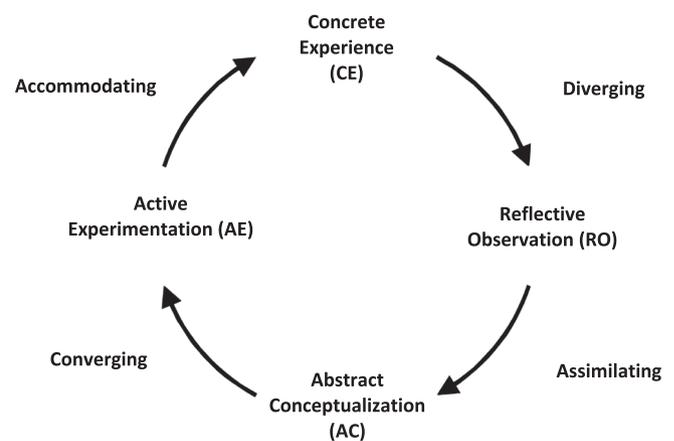


FIGURE 1 Kolb's (1984) experiential learning cycle and learning styles.

process it through RO (Kolb & Kolb, 2013). Divergers, therefore, rely mainly on their imaginative and creative abilities, as well as their communications with others, as they are open to receiving feedback from various individuals (O'Leary & Stewart, 2013). Students who learn through the assimilating style are best at planning, organising and analysing different aspects of information that they have received during lectures and readings by putting a wide range of this information into concise and logical frameworks (Kolb et al., 2001). Assimilators, therefore, can provide inductive reasoning because they prefer to obtain logical soundness rather than practical value (McCarthy, 2010).

Students who prefer the converging learning style provide practical uses for the ideas and theories by evaluating documents, selecting the best course of action and then making the proper decision (Kolb & Kolb, 2013). Convergers, therefore, prefer to handle technical cases such as experiments and simulations because they favour the practical applications of what they have learned (Manolis et al., 2013). Students with the accommodating style can initiate action to deal with new experiences (Loo, 2004) because they learn best from hands-on experiences and therefore enjoy experiencing new situations through carrying out plans that involve challenging and novel practices (Kolb & Kolb, 2005). Accommodators, therefore, prefer active involvement in

concrete cases and work with others to complete assignments by setting objectives and testing different approaches (Kolb & Kolb, 2013). Students' experiential modes, dimensions, styles and processes of learning are summarised in Table 2.

Because AS is a teaching instrument that narrows the gap between audit theory and practice, ELT seems an appropriate theoretical lens through which to explore students' perceived benefits of experiencing different learning styles through the utilisation of an AS assignment at a MENA university. ELT fits with AS because it 'helps us to understand learning at a deeper and yet more comprehensive level than previously' (Kolb et al., 2001, p. 241).

4 | RESEARCH METHODOLOGY

4.1 | Methodological approach

Our study explores how learning styles are perceived by students through an AS assignment while informing our analysis with insights from ELT. Because we examine the outcomes of complex and dynamic interactions during students' transitional processes of learning, an interpretive case study seems an appropriate methodology to follow (Lukka & Modell, 2010; Taylor, 2018; Yin, 2009). It is worth mentioning that the study's main author is the instructor of the audit classes and the co-author reflected on the collected data and theory integration. Hence, although we use an interpretive case study, our methodological endeavour can be positioned as AR because the authors are part of the scientific inquiry. Both are accounting instructors working in the university where the scientific inquiry took place, and the main author seeks to explore students' perceived benefits of experiencing different learning styles through an AS assignment while considering AS a solution to problems in audit teaching. Rapoport (1970, p. 499) states that 'AR aims to contribute both to the practical concerns of people in an immediate problem-solving situation and the goals of social science by joint collaboration within a mutually acceptable framework'.

AR involves a cyclical research process in a natural setting and can lead to an understanding of the circumstances that govern the nature of the phenomena under investigation (Foster, 1972; Susman & Evered, 1978; Van der Merwe, 2013). Indeed, the principal author works in academia and is involved in teaching auditing classes. Given the principal author's educational and professional background, the problem (i.e., enhancing students' practical experience through teaching auditing) was diagnosed and identified. A plan was then put

forward to provide a practical solution through AS, and this paper evaluates this chosen course of action in terms of how learning styles are perceived by students through the AS assignment. The co-author becomes involved in the scientific inquiry as an academic working at the same university, theorising the data and working with the principal author to rationalise the outcomes of the study in a discursive manner. Therefore, our methodological approach remains interpretative because the ultimate aim of our endeavour is a scientific contribution to accounting education literature.

4.2 | AS administration and description

The simulation-based assignment (Saadullah & Elsayed, 2020) used in this study was introduced in the spring of 2016 and conducted over 4 years until the spring of 2019. However, it was motivated at that time to study and explore the students' perceived benefits of experiencing different learning styles through the AS assignment. The simulation-based assignment was conducted at an Association to Advance Collegiate Schools of Business (AACSB)-accredited business school in the MENA region. This AS is accomplished by all students taking an advanced undergraduate auditing course in which the auditing of the revenue cycle is taught. Over 100 students complete this course every year; it uses adaptations of the textbook materials of Messier et al. (2012). Due to the shift into a distance-learning environment because of the coronavirus pandemic, the AS was not implemented in the years 2020 and 2021 because it requires the students to engage in the in-person learning mode.

Clear guidelines and rules of student engagement are discussed with the audit teams to assist them in performing the AS assignment successfully in a collaborative environment. For instance, the instructor highlights how the theoretical discussions of audit materials delivered during the lectures would enhance students' progress in fulfilling the AS requirements. A flowchart of the revenue cycle and an audit plan are also provided to facilitate understanding of the nature of the AS task and the connection between the types of accounting documents, books and statements. Besides this, audit teams are permitted to search for information by utilising their notes, textbook(s) and the Internet but without receiving help from other audit teams, professionals, instructors or friends. The teams have to work independently in the classroom, sharing their interpretations and perspectives and discussing the AS assignment with teammates only without any external support. Thus, copies of the AS are provided at the beginning of

TABLE 2 Experiential modes, dimensions, styles and processes of learning.

Modes (Kolb, 1984)	Dimensions (Kolb et al., 2001)	Styles (Kolb & Kolb, 2013)	Processes (current study)
Concrete experience (CE)	Perceiving dimension		
Reflective observation (RO)	Processing dimension	Diverging style	Visualising process
Abstract conceptualisation (AC)	Perceiving dimension	Assimilating style	Analysing process
Active experimentation (AE)	Processing dimension	Converging style	Evaluating process
Concrete experience (CE)	Perceiving dimension	Accommodating style	Initiating process

each class and collected at the end of each class during the simulation period. Furthermore, the instructor provides clarifications on the AS tasks without verifying the findings. This preparation and direction before the implementation of the AS assignment increase the audit teams' awareness of the importance of this experience in enhancing their understanding of how audit work is performed in practice.

The documentation set for the AS is presented in hard copy (consistent with Swanger and Jones's (2012) assertion that hard copies help students learn better), while the introductory materials and answer sheets for the simulation-based assignment are available electronically on the students' learning management system, Blackboard. A positive distinctiveness strategy based on their achievements is activated between audit teams in the grading system, which stratifies the teams to maintain students' positive perceptions of their teams. The audit team that identifies the highest number of valid misstatements with proper discussion is awarded the full mark for the assignment. Each team that finds one error less receives 0.50 less (for each error) than the highest grade. This procedure provided an appropriate motivation for each audit team to achieve positive distinctiveness when compared with other teams, consistent with Heere et al. (2011).

Saadullah and Elsayed's (2020) simulation-based assignment provides the appearance of a real audit experience: It is rich in detail, including a great deal of information for the students to review, examine, apply and connect. It requires the students to (1) perform the necessary substantive procedures related to the transactions of the revenue cycle, (2) detect errors in the financial statements and supporting documents, (3) identify the accounts and financial statements affected by the detected errors and (4) connect those detected errors with compromised management assertion(s). These AS's learning objectives were set to achieve mainly the third learning objective of the course. The course's learning objectives are to (1) understand the audit sampling process and apply different sampling methods, (2) discuss the auditing process of different transaction cycles and related components of the financial statements and (3) apply analytical skills in performing the substantive tests of transactions and the tests of details utilised to audit different corporate cycles. Following Saadullah and Elsayed's (2020) study, AS learning objectives align mostly with the spectrum of applying and analysing Bloom's taxonomy (Armstrong, 2010) because AS enables students to perform hands-on practice through investigating a set of accounting documents such as accounts, statements and several supporting documents related to the revenue process of a fictional clothing company. These accounting documents include a trial balance, subsidiary ledger, general ledger and statements of income and financial position, whereas the supporting documents comprise a price list, a bank statement, an open order report, and a set of sales orders, shipping documents, invoices and accounts receivable confirmations.

4.3 | Data collection methods and analysis

Our case study approach is supported by adopting a mixed-methods design. This design is widely utilised in social science research

(Johnson et al., 2007) and acknowledged in accounting education research (Alshurafat et al., 2020) for providing better quality research outcomes. As Johnson et al. (2007, p. 120) highlighted, 'Mixed methods research is the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study or set of related studies.' Mixed-methods design guided our data collection methods to explore students' perceived benefits of experiencing different learning styles through AS and analyse its role in enhancing students' performance. Our methods of data collection are mixed between the instructor's observations, an administered anonymous questionnaire, follow-up feedback from students and the student's grade centre on the Blackboard platform across two different periods, 2019 and 2022. The use of different data collection methods enabled the data triangulation recommended for interpretive case studies (Yin, 2009). Before the simulation period started (i.e., 2 weeks of lecture time, equivalent to 6 h), audit teams were constructed, and the rules of student engagement were addressed. The instructor introduced the simulation-based assignment by providing a general description of the simulated case (for instance, its background, the targeted learning outcomes, its requirements and the types of accounting books and statements that represent the simulation documentation set), which are discussed below.

During the student teams' implementation of the AS assignment, the instructor made some personal observations to articulate evidence of the audit teams' engagement and enthusiasm. While observing student performance and interactions, the instructor had several roles to perform. First, the instructor was completely involved in handing over a set of simulation documents at the beginning of class time and collecting them at the end of the class to enable students to work independently on the AS assignment without any external support. Second, the instructor provided the audit teams with feedback, hints and reminders of engagement guidelines aimed at improving their task management and performance. Third, the instructor was also available to answer students' questions related to either the AS instrument itself or other audit procedures and/or the audit profession overall. However, students were instructed not to ask questions to verify their findings. Finally, the instructor monitored the active discussions among the students within each audit team. If needed, the instructor led constructive discussions to provide help in solving conflicts and improving the team's functioning.

At the end of the 2-week simulation period, the students were administered a questionnaire designed to reveal how every student perceived the benefits of the AS educational method. Students' questionnaire responses supplement the instructor's observations as active participants in the delivery of the simulation-based assignment. All students individually completed this questionnaire to describe their experience of participating in the AS assignment. The questionnaire included six open-ended questions, which reflect the students' perceptions of (1) learning through the AS experience, (2) performing the AS within teams, (3) the difference between this instrument and previous learning tools, (4) its effect on student learning, (5) what students wanted to see later and (6) any suggestions students had to develop

the AS. These questions provided a basis for students to reflect on what they learned and how they benefited from the AS experience more deeply and comprehensively so that they could describe its benefits (Moilanen, 2017). The questions were developed from the outcomes reported mainly by Saadullah and Elsayed (2020) and other studies such as De Villiers (2016), Omitogun and Al-Adeem (2019), Sugahara and Dellaportas (2018) and Zelin (2010). It is worth mentioning that the questionnaire received ethics approval from the university review board, as mandated by the university code.

Follow-up feedback from students was received either verbally or via email; this was deemed the third source of data collection in our study. Several students were interested in expressing their thoughts, feelings and experiences with the AS assignment during and/or after the simulation period because none of the students had participated in any business simulation before, as revealed later in the following section. This verbal and written feedback constitutes an important source of information because it communicates students' feelings and thoughts. Verbal and written feedback is a valuable channel of communication and information, consistent with prior literature (such as Absalom & Marden, 2004; Hassini, 2006).

To examine the AS's role in enhancing students' performance, students' grades on the midterm and final exams are utilised to report the differences in their grades before and after the implementation of the AS. Before the AS implementation, the students had the midterm exam, while they had the final exam at the end of the semester. Both exams represent the highest individual assessments for the students enrolled in this advanced undergraduate auditing course, which appropriately reflect their levels of understanding of the audit materials. Both exams' dates, timings and locations were specified and announced by the university and the college administration. To reveal how effective is the AS in enhancing students' skills, with particular reference to our audit course in 'performing the substantive procedures in different transaction cycles', we compare students' grades before (midterm exam) and after (final exam) the AS implementation. Both exams, therefore, included questions targeted to test and illustrate the students' achievements of the course learning objectives (2) and (3) cited earlier and their assessment weights. Exams were paper-based and included questions such as multiple choice, true/false, matching, filling space and open-ended questions. Both exams included materials on the auditing of different transaction cycles. Students' understanding of the audit materials and ability to align audit theory with practice and apply analytical skills will, expectedly, be enhanced after the AS implementation. This enhancement is reflected when the final exam grade is higher than the midterm exam grade, consistent with Levant et al. (2016).

Students' answers to the questionnaire and their follow-up feedback provided the discourses, which enabled the analysis of the themes that emerged (Braun & Clarke, 2006). This thematic analysis is 'one of a cluster of analytic approaches you can use if you want to identify patterns of meaning across a qualitative dataset' (Braun et al., 2016, p. 191). This data analysis process was driven by the research objective of exploring how learning styles are perceived by students through the utilisation of AS. It offers flexibility and accessibility by not adopting a specific theoretical framework, as well as clarity about how the

qualitative data were examined, consistent with Braun et al. (2016), Braun and Clarke (2012, 2006) and Fereday and Muir-Cochrane (2006).

We adopted the six steps of thematic analysis recommended by Braun and Clarke (2006). After students' responses were collected (Step 1), they were separated and sorted in Microsoft Excel using open coding (Step 2), consistent with Neuman (2007). Open coding was utilised to become familiar with the collected data and select the appropriate theoretical framework to support the discussions. Besides the demographic information of students (including gender, year of study, grade point average [GPA] and age), we coded their answers to the questionnaire questions, which were read line by line. The reason behind this is to become familiar with the students' expressed ideas and opinions and to identify the common terms (i.e., codes) that convey the same meaning to retain data consistency. After the list of these common codes was analysed and categorised, we created consistent threads or patterns (i.e., themes) based on the instructor's judgement (Step 3) to summarise their responses (i.e., the identified codes). These themes were utilised later to articulate how learning styles are perceived by students through the AS assignment using ELT as a theoretical lens. In addition, we noted the appearance and frequency of these codes to form generalisations about the outcomes (Step 4). The processes of theme naming (Step 5) and interpretation for writing up the results (Step 6) were conducted by referring to the relevant literature, adopting a theoretical perspective and consulting with colleagues. Finally, we selected a sample of the participants' responses that were considered representative of the assigned theme from each question (Braun & Clarke, 2012) to facilitate the process of presenting their responses in the research findings.

In spring 2019 and 2022, 127 and 100 students, respectively, participated in the same simulation-based assignment, over the same 2-week period after the course's midterm exam was completed. It takes the three- or four-member audit teams 6 h of lecture time to complete the AS assignment in a collaborative environment. Forty-six in 2019 and 48 in 2022 of those students from the Arabic track completed the questionnaire and provided their feedback on their AS experiences. Those participants represent 100% of the students who registered for the Arabic track under the direct supervision of the instructor and completed the extended questionnaire's six open-ended questions. We focus on those students to maintain the instructor's direct observation of the students' teamwork, which not only provides adequate feedback for each team after the completion of the AS but also explores closely how they perceive the benefits of this educational method. The 46 participants in 2019 were divided into two separate sections: 33 were female (72%), and 13 were male (28%), while the 48 students in 2022 were 30 females (62.5%) and 18 males (37.5%).

5 | RESEARCH FINDINGS

5.1 | Demographic information

The basic descriptive statistics related to demographic variables for male and female students are presented separately in Table 3. The

TABLE 3 Summary of descriptive statistics—demographic information by gender.

	2019			2022		
	Male	Female	Total (average)	Male	Female	Total (average)
Number of students	13	33	46	18	30	48
Junior	2	4	6	1	2	3
Senior	11	29	40	17	28	45
Lowest age	20	21	20	21	21	21
Highest age	38	30	38	42	35	42
Average age	25.08	23.00	23.59	26.84	23.94	24.41
Lowest GPA	1.92	2.00	1.92	1.95	2.08	1.95
Highest GPA	3.57	3.83	3.83	3.61	3.81	3.81
Average GPA	2.66	2.9	2.83	2.51	2.82	2.74
Average grade in AS out of 15	14.42	13.33	13.67	13.86	13.63	13.51

Note: The descriptive statistics of all variables were collected from students who took an advanced undergraduate auditing course at a MENA region university in spring 2019 and spring 2022 or were extracted from the students' learning management system, Blackboard.

Abbreviations: AS, audit simulation; GPA, grade point average.

results show that none of the students had participated in any business simulation before. This may show a lack of familiarity with how practical business transactions and processes are performed. The majority of the students, 40 in 2019 and 45 in 2022, are senior students. The demographic characteristics of the students who participated in the simulation demonstrate an average age of 25.08 and 26.84 for males while 23 and 23.94 for females in the years 2019 and 2022, respectively. There is, however, quite a wide range of ages, with the youngest participant in the simulation being only 20 years old, whereas the oldest is 42. Additionally, all participants, except two male students, have a GPA level that puts them in good standing according to the university's classification. The students' GPAs in 2019 are found to range from 1.92 and 3.57, with an average of 2.66 for males, while they range from 2 to 3.83, with an average of 2.9 for female students, which is equivalent to 67% and 73%, respectively. These statistics are close to the 2022 statistics. Finally, the findings show that average grades out of 15 on the simulation-based assignment are 14.42 and 13.86 for males, whereas 13.33 and 13.63 for females in the years 2019 and 2022, respectively. These statistics indicate high motivation between students within their teams to compete with other teams and score the highest mark during the simulation period.

5.2 | Kolb's processional case

Relying on Kolb's processing dimension (RO and AE), this section looks at the students' transitional processes of learning (i.e., visualising, analysing, evaluating and initiating), which are associated respectively with the diverging, assimilating, converging and accommodating learning styles. Our discussion is informed by the ELT demonstrated in Table 2 and aims to explore students' perceived benefits of experiencing different learning styles through an AS assignment as expressed and observed through students' feedback, their responses to the questionnaire and the instructor's observations.

Table 4 summarises the themes that emerged from our analysis of students' responses in alignment with their associated learning styles.

5.2.1 | Reflective observation

As the first mode of Kolb's processing dimension, RO is articulated here through the processes of visualising the AS experience and analysing the documentation set before taking action.

Visualising process

Visualising is the transformation process of learning from the AS experience to observations and reflections through imagination and exchanging ideas and perspectives (Kolb & Kolb, 2013). Prior ELT research has concluded that learners with diverging learning styles depend mostly on their imaginative and creative abilities to visualise an experience, where they will be in a position to receive feedback from others to assist them in processing the CE through RO (Butler et al., 2019; O'Leary & Stewart, 2013). When the AS was initially handed to the audit teams, it appeared from the instructor's observations that students were a little overwhelmed, as evinced by a period of silence and some expressions of shock due to the AS's scope and size. This was the most prevalent image of the AS assignment and appeared to be consistent for both male and female students. This negative image was also expressed in student feedback during their discussions with the instructor or written via email, which included the following:

- 'The simulation looks dreadful';
- 'I have not seen such documents and accounting books before';
- 'This assignment is different. It does not look like the other assignments that we had before';
- 'Can the simulation be changed to a normal case-based learning tool?'; and

TABLE 4 Summary of common terms, themes, numbers and proportions.

Questions	Common terms (codes)	Themes	Responses' numbers and proportions		Learning styles
			2019 (n = 46)	2022 (n = 48)	
Q1: What did you learn from this audit simulation experience?	<ul style="list-style-type: none"> • Concepts and practice • Better than the textbook • Theoretical discussion • Active learning • Practical case • Audit service • Financial reports 	Alignment between audit theory and practice	29 (63%)	32 (67%)	Converging
	<ul style="list-style-type: none"> • Obtaining the needed information • Identifying errors and misstatements • Understanding and reviewing corporate processes • Assessing the evidence 	Improvements in soft skills and career attributes	36 (78%)	41 (85%)	Assimilating
Q2: How was the work within teams achieved?	<ul style="list-style-type: none"> • Teamwork • Collaboration • Communication • Technical skills • Working autonomously would not provide help • Lower workload 	Sharing ideas and thoughts	Almost all	Almost all	Assimilating
Q3: How does this experience differ from other classroom experiences in your undergrad programme?	<ul style="list-style-type: none"> • Unique and rare • Interactive and rich • Real case • Class experience • Different from other assignments • Change of direction than what was provided before 	Rare experience	33 (72%)	38 (79%)	Diverging
	<ul style="list-style-type: none"> • Beneficial and useful • Effective • Detailed knowledge • Brainstorming • Thinking and learning • Hands-on assignment 	Depth of learning	30 (65%)	32 (67%)	Converging
Q4: In comparison to reading and participating in team discussions, how has this experience affected your learning?	<ul style="list-style-type: none"> • Understanding audit materials and procedures • Awareness of audit evidence and documents • Making judgements • Decision-making • Fraud occurrence • Collecting audit evidence and documents 	Different ways of audit knowledge enhancement	Almost all	Almost all	Converging
Q5: Because of this experience, what would like to see happen later?	<ul style="list-style-type: none"> • Other similar projects • Other courses follow the same style • More audit cases • Same scenarios and approaches of experience 	Adoption of such experience in other courses	28 (61%)	34 (71%)	Accommodating
	<ul style="list-style-type: none"> • Auditing jobs • Real audit work • Accounting firms and Big 4 • Doing an auditor role • Being an auditor member 	Being an auditor in the future	24 (52%)	28 (58%)	Accommodating

TABLE 4 (Continued)

Questions	Common terms (codes)	Themes	Responses' numbers and proportions		Learning styles
			2019 (n = 46)	2022 (n = 48)	
Q6: What would you like to change about this experience?	<ul style="list-style-type: none"> • Insufficient time • Time pressure and challenge • Time conflict • Do it at home 	More time	17 (37%)	14 (29%)	
	<ul style="list-style-type: none"> • Extra activities • Additional evidence • Different cycle • Meet an expert • Visit an accounting firm • Field trip • Practice in an audit firm 	Extra work	37 (80%)	37 (77%)	Accommodating

Note: The numbers embedded in the table represent the number of responses (not the number of students). Students could show more than one learning style in their responses to any open-ended question. For example, a student could show both converging and assimilating learning styles related to the first open-ended question based on the included wording in his or her answer.

- 'I do not know how I can do the tasks. You did not show us in lectures'.

The instructor, therefore, suggested that they start by reading the documents and advised students to track the documents through the flowchart of the revenue cycle and the audit plan. After a while, audit teams started to discuss and share their ideas and perspectives while consulting the audit information from the textbook, their lecture notes and any available online information in an attempt to connect the AS materials with audit concepts, theories and how to perform the substantive procedures. This is supported by De Villiers (2016) because simulations are characterised as an interactive learning process that realistically represents a real-world system and allows the hands-on practice of skills. Looking at each other in silence shifted to communication and interactions. The audit teams started to interactively share their viewpoints and ideas about the AS documents and accounting books.

Student responses to the questionnaire's third question (72% in 2019 and 79% in 2022), that is, the difference between this AS instrument and previous learning tools, clearly reflect that they were provided with a simulation-based learning assignment through a realistic set of detailed accounting reports and supporting documents. They highlighted several benefits to using a CE through words like unique, rare, different and rich, referring to visualising a rare experience. These demonstrate the significant role of having a realistic experience (consistent with Butler et al., 2019; Kolb & Kolb, 2005; Kruger, 2011) to enhance student involvement in the remaining modes of the learning process. They said the following:

- 'The AS was rare and different, it looked like real audit work';
- 'The simulation was better because it is realistic';
- 'The simulation was unique in terms of experiencing the auditor's atmosphere';

- 'The audit simulation was more valuable than what I had during the past three years in the university'; and
- 'It was rich in terms of accounting books and set of evidence'.

As shown from students' responses, the simulation assignment as a CE offers a good opportunity to enhance students' cognitive learning through a deeper understanding of audit theory and concepts. Providing a real-world assignment helps students to internalise auditing knowledge by imagining the audit workplace and working interactively in sharing ideas and perspectives and then making sense of them through reflection and abstract thinking (De Aquino et al., 2005; De Villiers, 2016). Compared to prior ELT literature, the AS also promotes the students' constructivist learning by enhancing their reflections and understanding of audit concepts by endeavouring to grasp how these concepts actually work in practice for creating a meaningful learning experience (Healy & McCutcheon, 2008; Kolb & Kolb, 2013; Manolis et al., 2013). These, in turn, would encourage students' reflection and engagement and prepare them for realities. On the other side, the AS provides the auditing students to experience a unique and rich assignment with an opportunity to explore the ethical dilemmas that are represented by the embedded errors in the financial statements and supporting documents and examine how they would navigate these dilemmas, consistent with prior studies (such as Bautista-Mesa et al., 2018; Clikeman, 2012). These benefits, in turn, align with students' preferences of diverging learning styles, as they can not only view and imagine the AS experience but also recall information about audit theory and share their feedback and perspectives with peers (Kolb et al., 2001) to refine their comprehension of the AS assignment.

Analysing process

Analysing is the transformation process of learning from abstract concepts and generalisations to RO through students' analytical thinking

to obtain logical soundness before applying them (Kolb & Kolb, 2013). Research has revealed that learners with the assimilating learning style understand experiences in more depth and provide inductive logical reasoning by planning, organising and analysing a wide range of audit information (Kolb et al., 2001; McCarthy, 2010). The instructor noticed that the majority of the audit teams began organising the AS documentation set by grouping the accounting books and financial statements and separating them from the supporting documents (a price list, a bank statement, an open order report and accounts receivable confirmations), as well as the sample of sales orders, shipping documents and invoices.

More student discussions and collaborations were observed in their planning and organising of the AS materials by referring to their notes and the online information. Within each audit team, it appeared that some students were tracing the accounts and their amounts from the revenue documents (starting with sales orders, then shipping documents and invoices) to the accounting books (such as the subsidiary ledger, general ledger and trial balance) to the financial statements (the income statement and financial position statement). The instructor noticed that they moved back and forth in an attempt to detect any differences. Most importantly, this process of comparing and analysing the AS documentation set was not performed only by students who had performed well on the midterm exam. Students with lower performance on the midterm exam were observed taking the lead to find any misstatements. At this stage, students started to gain logical reasoning through their analyses of audit information that they perceived and thus made sense of the AS assignment. Their verbal or written feedback included the following:

- ‘This is my first time to see what the sales order, the shipping document, the invoice look like’;
- ‘Do these documents and books look like the real ones in any company?’; and
- ‘Connecting the AS experience with audit ideas assists me in understanding the auditing work’.

It was also observed that the majority of students showed professional competencies in terms of leadership, mentoring and managing the workload, as well as research and critical thinking skills, consistent with prior studies (e.g., Bautista-Mesa et al., 2018; Clikeman, 2012; Steenkamp & Rudman, 2007; Williams & Kollar, 2009). Sharing multiple thoughts and viewpoints through team collaboration to discuss and meet the simulation-based assignment's requirements enabled students to be more involved in the learning process (Butler et al., 2019), through which their professional and soft skills improved (Gittings et al., 2020). This is also reflected in their responses to the first (78% in 2019 and 85% in 2022) and second (100% in both periods) questions of the survey: learning through the AS experience and performing the AS within teams, respectively. They mentioned the following:

- ‘I learnt the alignment between the accounting and audit cycles’;
- ‘I understand now how the auditor is performing the substantive procedures’;

- ‘It was enjoyable to work as a group to share thoughts and collaborate in analysing documents together’;
- ‘Working in teams is essential to perform audit tasks’; and
- ‘This experience was good in gaining skills in performing the audit tasks’.

These responses demonstrate how students' diverse skills were developed by participating in analysing the AS materials. For example, students' professional skills (such as critical thinking and problem-solving [Butler et al., 2019], teamwork [Worrell, 2010] and communication skills [Bautista-Mesa et al., 2018]) would be improved through their collaboration and interaction to investigate various scenarios and challenges. According to ELT literature by Kolb and Kolb (2005), Loo (2004) and Kolb (1984), assimilating learners often exhibit strong critical thinking skills, making connections between concepts and identifying patterns and principles. These skills are considered one of the most prominent benefits of using active learning activities (Gittings et al., 2020). This experiential learning assignment also assists students in enhancing their deep understanding of the underlying fundamentals of auditing processes (Levant et al., 2016) and forming their ROs to develop their analytical skills and learn how to navigate complex audit issues. This is consistent with the majority of prior AS literature (e.g., Edmonds et al., 2019; Swanger & Jones, 2012; Van der Merwe, 2013) in enabling students to learn from each other with a consideration that not all learners have the same way or at the same pace of learning. Such teamwork effort is found crucial not only in interactively carrying out required tasks but also in gaining additional soft and technical skills (such as expressing thoughts, leading a team, managing the work, searching for information and using technological tools) in alignment with Worrell (2010), Borthick and Curtis (2008) and Savage et al. (2008). As a result, students who prefer assimilating learning styles would strengthen their critical thinking and analytical techniques through such AS assignments by reflecting on and observing each other while exploring analytically the AS documentation set and then connecting this documentation set with what they absorbed in terms of theoretical audit underpinnings. These findings provide insights to professional accounting bodies (e.g., the International Accounting Education Standards Board [IAESB]) to increase awareness and the adoption of simulations to improve the quality of accounting education because these bodies require specific competencies as part of their course accreditation standards.

5.2.2 | Active experimentation

AE, the second mode of Kolb's processing dimension, is outlined here through the processes of evaluating the AS assignment by applying theoretical knowledge to solve practical problems and, then, initiating action to deal with new experiences.

Evaluating process

Evaluating is the transformation process of learning from abstract concepts and generalisations to AE through technical handling of the

practical examination and making the proper judgements. In prior ELT literature (e.g., Kolb & Kolb, 2013; Manolis et al., 2013), learners who use the converging style prefer hands-on experiences of audit ideas and theories, integrating them with what they have perceived and/or observed through their critical and analytical thinking about the AS experience. This leads to a better comprehension of the audit process (Elsayed et al., 2023). After the audit teams traced and compared the AS supporting documents with the accounting books and financial statements, they detected different types of errors. Once the first error was detected, this was the turning point where the instructor noticed that students seemed to feel more confident and gained assurance with the process of performing the substantive procedures that they adopted to detect errors. The students' feedback during their discussions with the instructor was also generally positive, which included the following:

- 'I found errors in values by comparing the sales orders with the shipping documents, the invoices and the subsidiary ledger';
- 'There is evidence of transaction occurrence, but it is not recorded';
- 'This sale transaction took place in a year different than what it is recorded';
- 'No supporting document for this transaction existed, although it was recorded'; and
- 'This operation is classified in a wrong account title'.

Although the first error was difficult to detect, it appeared to the instructor that the audit teams were gaining a further understanding of the audit ideas and theories, consistent with Levant et al. (2016). The more errors were detected, the more confident the students became in critical thinking, analysis and practical evaluation. By the end of the first lecture period (equivalent to one and a half hours), many students were reluctant to return the AS materials to the instructor. They generally showed a wish to continue analysing and evaluating the AS materials to detect further errors. At the next lecture, they were eager to receive their documentation set and worked enthusiastically. Before the session started, the instructor observed the teams discussing how to proceed. They had not only the experience from the prior session but also the chance to consult the audit materials and discuss the AS assignment among themselves. Students were strongly engaged and more active in collaboratively analysing and examining the accounting documents, books and statements to detect and document any misstatement. They kept moving back and forth between documents to detect any more errors. The instructor also noticed that the students were reviewing the audit information regarding the management assertions' terms to reach agreements with teammates regarding how the detected error could practically be linked to these assertions. Each error detected was discussed within the team; once they agreed on the detected error, they identified the affected accounts and hence the affected financial statements and then connected each with a violated management assertion.

Students' responses to the questionnaire's first (63% and 67%), third (65% and 67%) and fourth (almost all) questions, that is, learning

through the AS experience, the difference between this instrument and previous learning tools and its effectiveness on student learning, in years 2019 and 2022, respectively, show how their understanding of audit concepts and theories was enhanced. In many instances, students' responses emphasise how the AS assignment supported their audit knowledge construction. They used words and expressions like active learning, audit concepts and practice, theoretical explanations, beneficial, useful, effective, brainstorming, audit materials, audit evidence and making judgements, which refer to gaining deep learning and an alignment between audit theory and practice. They stated the following:

- 'This experience enhanced my understanding to what extent the textbook had tried to explain the audit information';
- 'I am now able to apply the audit content taught to a real work example';
- 'The assignment made me more familiar with what auditing is and how its process is performed';
- 'Linking what is studied in the classroom with cases from the audit workplace helps me understand well the course theory and its practice'; and
- 'Performing the substantive procedures by examining and evaluating the accounting documents enhances my comprehension of auditing terms'.

These responses reflect how students' AE mode shapes their improved abilities to make effective decisions about the status of AS accounting books and reports, consistent with ELT literature (Kolb et al., 2001; Loo, 2004; Morris, 2020) through the application of audit knowledge in practical situations. This aligns with constructivist learning that suggests learners actively build their knowledge by applying theoretical concepts in real-world scenarios, such as simulation-based assignments, which facilitate a more holistic understanding. Compared to prior AS studies, the present AS assignment fosters students' in-depth learning of audit knowledge (Chiang et al., 2021), creates a concrete learning experience (Worrell, 2010) and assists in recalling audit concepts and theories (Elsayed et al., 2023) to bridge the gap between audit theory and practice. This finding is consistent with prior AS studies that provided support to the dimensions of participating, reflecting, thinking and applying the audit ideas and theories (Chiang et al., 2021), constructing audit knowledge (Butler et al., 2019) and retaining for lifelong learning (Gittings et al., 2020) to better prepare for real-world auditing. On the other side, converging learners typically possess advanced problem-solving skills as they work with various audit strategies and techniques, as well as improved technical skills as they are exposed to the intricacies of audit procedures, accounting standards and regulations (Clikeman, 2012; Williams & Kollar, 2009). This stage, in turn, aids the team members in gaining further comprehension of audit theory and knowledge (Elsayed et al., 2023). Therefore, the AS supports students' preferences of converging learning styles with improved analytical thinking, enhanced technical knowledge, effective decision-making abilities, increased confidence in handling complexity, alignment with career goals, and

better integration of theory and practice (Kolb et al., 2001; Manolis et al., 2013).

Initiating process

Initiating is the transformation process of learning from the AS experience to AE through interacting effectively with the current learning activity to initiate action to perform positively in new experiences. Previous research suggests that learners with the accommodating style enjoy learning by doing through active participation in CEs because they learn best from these experiences by processing them through AE to enable them to initiate actions to deal with new challenging cases (Kolb et al., 2001; Kolb & Kolb, 2013; McCarthy, 2010). The instructor further observed that audit teams, on a few occasions, began to find scattered or incomplete information in the source documents. It was, therefore, difficult to assist them in making a proper judgement on how to classify a particular error or whether it was an error to consider. Their verbal feedback included the following:

- ‘Doctor, is this an error?’;
- ‘I am struggling in classifying this misstatement’;
- ‘Do I have to exercise here professional scepticism in assessing this situation?’; and
- ‘Do the auditors face difficulty in identifying some misstatements?’.

The instructor reminded the students of the incomplete nature of information in real audit environments and asked them to exercise their professional judgement based on the existing information. Audit teams were found doing their best and making their decisions with the existing information, which reflects the process of shifting audit theory to practice (De Villiers, 2016). Because the end of the 2-week simulation period was approaching, the instructor noticed that the majority of the audit teams had assigned a member or two of the team to identify the accounts and the financial statements affected by each detected error, while the rest were focusing on searching for any more errors that were still outstanding. Over time, the instructor perceived that the more errors were detected, the more confident the students became in analysing and thinking critically about the rest of the errors that probably still existed, and they were greatly energised to find more. Finally, the team members sat together to review their list of detected errors and identification of affected accounts and financial statements along with the compromised management assertions before handing it to the instructor. They expressed during their discussions with the instructor how they relished working as a team in actively practising this challenging assignment (Kolb et al., 2001), wishing to be involved in more such hands-on audit practices.

This wish is reflected in their responses to the questionnaire's fifth (100%) and sixth (80% and 77%) questions: what students wanted to see later and any suggestions students had to develop the AS, in the years 2019 and 2022, respectively. They indicated their desire to (1) become auditors in practice by mentioning auditing jobs, doing real audit work and being an auditor; (2) do additional simulation-based assignments in other courses by including references to similar projects, other simulations and scenarios; and (3) engage

with follow-up audit activities (such as visiting an auditing firm or discussing the outcomes with an audit expert) or activities in different cycles (e.g., the purchase cycle). These preferences highlight the respondents' ambitions to enhance their analytical thinking and application of other experiences and act to transform their auditing knowledge, consistent with the work of Healy and McCutcheon (2008) and Kolb's (1984) learning cycle. They said the following:

- ‘Because of this experience, I am now interested in the audit profession’;
- ‘I would like to have an opportunity to practice what I learnt’;
- ‘I think the AS can benefit me shortly if I choose to work as an auditor’;
- ‘It would be interesting to participate in simulations designed by audit firms’;
- ‘I am hoping for this learning tool to be adopted by other courses’;
- ‘Applying the experience to other cycles of the same company would benefit students’; and
- ‘I hope to visit an auditing firm and watch what professional auditors do to know how audit work is done’.

These statements show that students desire to enhance not only their learning and understanding of the audit discipline but also their audit skills and techniques by participating in further hands-on experiences and acting on what they have learned in the real audit workplace. This finding has little support from the previous AS studies (Savage et al., 2008; Worrell, 2010); however, the ELT literature emphasises that experiential learning increases students' awareness to initiate actions for new experiences (Kolb & Kolb, 2005; O'Leary & Stewart, 2013; Ranchhod et al., 2014). Meeting a professional expert from an audit environment and undertaking additional auditing activities reflect students' interest in being more involved in the audit learning process, consistent with prior ELT literature: Gittings et al. (2020) and Butler et al. (2019). Students' preferences to initiate new experiences articulate their alignment with accommodating learning styles through professional practice (Kolb et al., 2001; McCarthy, 2010), as they are willing to create a more solid logical value for audit knowledge and the audit profession. Accommodating learners, therefore, thrive in action-oriented environments by applying what they have learned in real-world situations. This learning style often leads to equipping students with strong problem-solving skills, which are crucial for professions (such as auditing) that require hands-on expertise (Clikeman, 2012; Steenkamp & Rudman, 2007). These outcomes are useful for accounting educators to improve curricula and consider simulations in other disciplines than auditing because teaching and learning activities not only enhance lifelong learning but also help students adapt to evolving skills and techniques due to changes in industry nature and demands.

5.3 | Empirical analyses

The students' perceptions are supported by empirical analyses focusing on a comparison between the students' performance in the

midterm and final exams. The statistics related to the overall students' grades are presented in Table 5. Interestingly, the average grade of students' midterm exam in 2019 is 20.06 (57%), while the mean grade for participants' final exam is 27.3 (78%), while they are 19.59 (56%) and 22.8 (65%), respectively, for 2022 statistics. This implies that there is an improvement in participants' grades after adopting the AS assignment, consistent with O'Leary and Stewart (2013). By indicating the difference between the midterm and final exams, there is a positive average difference of 7.21 with a median mark of 7.25, a standard deviation of 4.3, a confidence level (95%) value of 1.28 and a quite wide range from -1.5 to 17.5 for 2019 statistics. This indicates that the majority of participants received a positive difference between the grades for the midterm and final exams. These statistics are close to the 2022 statistics. These findings support our expectation that students' understanding of the audit materials and the ability to align audit theory with practice are enhanced after the AS implementation.

To check the sensitivity of the findings related to the difference in participants' grades, a paired t test is performed to determine whether the AS assignment was effective by reporting the difference in the students' grades between the midterm and final exams or

whether no difference is reached. The findings are presented in Table 6. We found that dividing the 2019 average difference by the standard error ($7.2119/0.6377 = 11.309$) from Table 5 is the same as the value of the reported 't stat' in Table 6. The mean of the difference (i.e., 7.212) was significantly greater than zero, t stat = 11.309, two-tailed $p = 0.0000$, providing evidence that the AS assignment was effective in enhancing students' grades. These findings are close to the 2022 results. The outcomes, therefore, confirm the robustness of the findings in supporting our expectations that students' understandability is enhanced after the AS implementation.

6 | DISCUSSION AND CONCLUSIONS

The vast majority of AS studies focus on providing teaching-based cases, while this study aimed at exploring students' perceived benefits of experiencing different learning styles through an AS assignment and analysing its role in enhancing students' performance using an interpretative case study methodology across two periods, 2019 and 2022. We relied on ELT to inform our case study analysis and

TABLE 5 Summary of grades' statistics.

Year	Variables	Mean	Median	Standard deviation	Standard error	Min. (max.)	Obs.
2019	Midterm exam	20.059783	20	4.171059	0.614989	8 (27)	46
	Simulation case	13.673913	13.75	1.044655	0.154026	11 (15)	46
	Final exam	27.271739	28.5	4.661553	0.687384	14 (35)	46
	Change in statistics	7.2119565	7.25	4.324982	0.637684	-1.5 (17.5)	46
2022	Midterm exam	19.59375	19.75	4.419079	0.637839	10.5 (28)	48
	Simulation case	13.71094	13.875	0.927977	0.133942	11.625 (15)	48
	Final exam	22.83507	22.75	5.461543	0.788306	12.83 (33.83)	48
	Change in statistics	3.241319	2.5	5.466917	0.789082	-5.5 (17.1)	48

Note: The grades' statistics are extracted from students' grades centre on the Blackboard platform for the years 2019 and 2022. The midterm and final exams are equivalent to 35 marks each, while the audit simulation is equivalent to 15 marks. Using a confidence level of 95%.

TABLE 6 Paired t test for means: midterm and final exams.

	2019		2022	
	Final exam	Midterm exam	Final exam	Midterm exam
Mean	27.271739	20.059783	22.83507	19.59375
Variance	21.73007	17.39773	29.82845	19.52825798
Observations	46	46	48	48
Pearson correlation	0.525168442		0.403346	
Mean difference	7.212		3.241	
Hypothesised mean difference	0		0	
df	45		47	
t stat	11.309613		4.107712	
$p(T \leq t)$ one-tailed	4.79329E-15		7.92E-05	
t critical one-tailed	1.679427393		1.677927	
$p(T \leq t)$ two-tailed	9.58658E-15		0.000158	
t critical two-tailed	2.014103389		2.011741	

illustrate how learning styles—diverging, assimilating, converging and accommodating—were perceived by students through the AS assignment. Our case study relied on different data collection methods such as the instructor's observations, students' discourse in their answers to the questionnaire, their follow-up feedback received during and/or after the AS period, and the students' grades. It explores and interprets the transitional processes of students' learning as seen in their evaluation of an AS assignment in an Arabic-speaking country, whereas the majority of prior AS studies have taken place in English-speaking countries. The findings of this study have implications for the accounting education literature, professional accounting bodies and educators, and we have some recommendations for future research as explained below.

Our findings show that audit students experienced effectively all four modes of Kolb (1984) at different times during the AS learning process and moved back and forth through these modes, consistent with Chiang et al. (2021). However, our study extends the work of prior AS literature by documenting how students' learning has evolved through the ELT transitional processes (Kolb et al., 2001) by exercising different learning styles during the AS assignment's implementation. First, students found that the AS enhanced their ability to visualise a realistic-looking set of detailed accounting documents, which eventually enhanced their imagination of the audit workplace, as the diverging learning style requires. This offers validation to the previous studies of Van der Merwe (2013) on the importance of exposure to real-life practice, Clikeman (2012) on examining a realistic set of documents, Worrell (2010) on simulating a real-world audit and McCarthy (2010) on viewing an existing CE through different perspectives by relying on imaginative abilities. Second, the AS experience developed students' professional and technical skills (e.g., critical thinking, communication, teamwork, research and project management) while they were organising, analysing and examining the AS documents through team engagement and discussions, as the assimilating learning style suggests. This is supported by prior simulation literature on enhancing students' technical accounting knowledge and communication skills (Bautista-Mesa et al., 2018; Clikeman, 2012) and higher order thinking, interpersonal and interviewing skills (Levant et al., 2016; Savage et al., 2008; Schatzel, 2011).

Third, students also found the AS to be a more active learning instrument in how to evaluate accounting documents practically and helpful in integrating audit ideas and procedures with what they perceived, as the converging learning style entails. This is consistent with the findings from prior surveys (such as Edmonds et al., 2019; Saadullah & Elsayed, 2020; Schatzel, 2011; Swanger & Jones, 2012; Zelin, 2010), which indicated that students' understanding of the tasks that an auditor performs increased after participating in the simulation-based assignment. Finally, the AS experience enabled students to increase their awareness of the profession, their interest in applying what they learned by initiating actions for new hands-on experiences and their satisfaction about becoming auditors, as the accommodating learning style suggests. This supports the studies of O'Leary and Stewart (2013) and Worrell (2010) about helping

students to carry out plans, take risks to excel in new experiences and spark interest in the auditing profession. Although some students expressed a few concerns about the time constraints in completing the AS assignment, they were reminded that auditors normally have limited time to accomplish their tasks.

The AS teaching instrument is, therefore, found to be very effective in providing an experiential learning environment and enabling students to use each of the four learning styles, rather than relying upon their preferred learning style. This may contradict Kolb and Kolb's (2013) claim regarding the impossibility of combining the four modes of learning because students have different preferences in learning. When an active learning instrument is well constructed, learners would be enabled to exercise all four modes of learning and, therefore, be exposed to different learning styles rather than their preferred style of learning. Through students' engagement, reflection, thinking and application (Kolb, 1984), knowledge is well grasped (Butler et al., 2019), students' professional and soft skills are evolved (Levant et al., 2016), and, therefore, learning is retained for a lifetime (Gittings et al., 2020). These findings are supported by empirical analyses that suggest a positive difference in the students' grades between the midterm and final exams, implying an improvement in their grades after the AS implementation. This study, therefore, shows that this learning experience proved to be beneficial for students of different ages and GPAs. It adds empirical evidence to prior research (e.g., Ertmer & Newby, 2013; Moilanen, 2017) on the impact of simulation cases on enhancing the learners' performance.

While the research findings offered valuable insights into students' experiences of various learning modes in line with Kolb's ELT and showed how these learning styles evolved during the AS assignment's implementation, it is essential to critically examine and reflect on these findings. First, this study goes beyond prior research by documenting how students' learning styles evolved during the AS assignment's implementation. This adds depth to our understanding of how experiential learning impacts students' cognitive processes. However, the study might benefit from a detailed analysis of how and why this evolution occurred. Were there specific triggers within the AS assignment as an experiential learning tool that prompted shifts in learning styles? Understanding these mechanisms could provide valuable insights for educators. Second, the finding that the AS assignment enhanced students' ability to visualise and imagine the audit workplace suggests that exposure to real-life practice and imaginative abilities are essential for developing a deeper understanding of audit processes. However, it would be beneficial to highlight the limitations of relying solely on students' imaginative abilities. In the real auditing world, practical skills and attention to detail are equally crucial. It is significant not to overemphasise one aspect of learning at the expense of others.

Third, the AS experience's impact on students' professional and technical skills emphasises the importance of critical thinking and communication. However, this research highlights the development of students' skills but does not delve deeper into whether these skills are transferable to real auditing scenarios. It is essential to

consider whether the skills gained through simulation translate effectively to actual audit work. Fourth, the AS assignment's role in promoting active learning and practical integration of audit ideas focuses on practical application. However, it is crucial to acknowledge that real audit work involves more than just practical application. It also requires a deep understanding of audit concepts, regulations and ethical considerations.

Fifth, the AS experience increased students' awareness of the auditing profession, sparked their interest in applying what they learned and enhanced their satisfaction about becoming auditors emphasising adaptability and willingness to take risks. This aspect highlights the transformative potential of experiential learning. It suggests that such learning experiences not only impart knowledge but also shape students' attitudes, aspirations and career choices. Encouraging students to explore and embrace new experiences can lead to a deeper connection with their chosen profession. However, it is significant to consider whether increased interest in the auditing profession is solely a result of the AS assignment or if other factors influenced this perception. Additionally, measuring long-term career satisfaction and success would provide a more comprehensive understanding of such an impact. Finally, the study's assertion that the AS assignment effectively engages students in various learning styles and improves their grades suggests that experiential learning is a valuable pedagogical approach. While the positive impact on grades is encouraging, it is crucial to consider other potential factors that may have influenced the grade improvement. A more comprehensive analysis is suggested to isolate the effects of the AS assignment.

In conclusion, these research findings provide compelling evidence for the effectiveness of experiential learning by shedding light on the benefits of using an AS assignment in audit education. They support the notion that a well-designed experiential learning environment can enhance both learning outcomes and overall academic performance. They also underscore the importance of integrating multiple learning styles and the value of hands-on experiences in developing both subject-specific knowledge and essential professional skills. Additionally, the positive impact on students' grades and career interests demonstrates the potential long-term benefits of such an approach in education.

7 | IMPLICATIONS, LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

These findings have significant theoretical and practical implications, particularly in the fields of auditing, accounting and professional education. Regarding theoretical implications, first, AS aligns with cognitive learning that emphasises active engagement and problem-solving by providing a practical context for students and professional accounting bodies (e.g., IAESB) to apply ELT knowledge for internalising audit theory and concepts. Second, AS promotes constructivist learning as students actively build their understanding through hands-on experiences by connecting audit theory with practice to create a meaningful learning experience. Third, by simulating real audit

scenarios, students can also enhance their ability to transfer their knowledge and skills from the classroom to real-world audit engagements, which improves their training effectiveness. Finally, the choices and consequences of practising the AS can provoke discussions about ethics and morality as it can be used to explore the ethical dilemmas that arise in various scenarios and investigate how learners and companies navigate these dilemmas.

As regards practical implications, first, AS is widely utilised in the training and education of auditors, both at the student and professional levels. It helps learners practice and refine auditing skills in a controlled environment. This includes tasks like sampling, evidence gathering, analytical thinking and risk assessment, which are essential for an effective audit career. Second, AS often involves collaboration among team members, where learners can develop their teamwork and communication skills, which are vital in a professional audit setting. Third, experienced auditors can use AS for ongoing professional development by staying updated on best practices, new audit standards and evolving audit methodologies. Finally, companies can use AS to assess the auditors' competency as simulations provide a standardised method for evaluating individuals' performance in realistic audit scenarios, while educators can improve audit pedagogy and curricula by considering simulations as an active learning tool and an assessment task in other disciplines than auditing.

Our study is not free from limitations. First, the use of the case study approach bears a certain lack of objectivity because of the subjective nature of the research endeavour as an interpretive case study. What mitigates this limitation is the use of different data collection methods to triangulate data to corroborate our evidence. Second, the lack of generalisability is another limitation associated with the case study approach. What mitigates this limitation is that we had some theoretical implications—the AS enables students to use different learning styles rather than relying on their preferred learning style, and it could be substituted for standard auditing textbooks and an audit internship—that can be generalised to other contexts in which students undergo experiential learning through the AS experience. A third limitation rests on the fact that we gathered students' perceptions from those who may have no prior experience with simulation in teaching. Hence, the analysis of findings may be biased because of the lack of students' understanding of the fundamentals related to simulation. The issue of students' 'rare experience' of simulation goes beyond the scope of the current study and, hence, represents an area for future research.

The investigation of student experiences utilising more interactive approaches (e.g., interviewing focus groups) also represents an area of future research. Besides this, it would also be useful to conduct an AS in different cycles (such as purchase and payroll cycles) because some students showed interest in participating in other simulations in different operational cycles. Future research could also include exploring how learning styles are perceived by students in different geographical contexts. Other research could explore in more detail the shift of students' preferred learning styles through several active learning instruments. Interviewing the AS and non-AS students after experiencing real audit work to understand how they

perceived the reality of the profession is another potential research endeavour.

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CONFLICT OF INTEREST STATEMENT

The authors declare that they have no conflicts of interest. The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

DATA AVAILABILITY STATEMENT

Data were collected from the participants and are available upon request.

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