
Enhancing student's learning through trading simulation: a vehicle for experiential learning: an action research

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Abstract: Chalk and talk have been replaced by innovative methods of student engagement in higher education. Current research reports use of Tadawul's trading simulator, which captures the student's learning experience on usage of trade simulation. Fourteen undergraduate (finance track) students participated in this game over a period of 60 days. Survey results revealed that students had positive learning experience through experiential learning. 86% of the students strongly agreed that simulation helped to understand the concepts better and they enjoyed the activity. 79% of the students were in strong agreement with their group activity for simulation. 64% students strongly agreed in terms of perception of realism and employability. Students suggested increasing the time period, replacing the traditional exam by the simulation to be used as assessment technique. Overall, simulation has built better understanding of concept of finance through concrete experience of reflective observation and ability to solve complex finance problems.

Keywords: finance; simulation; experiential learning; action research; learning management system; LMS.

JEL codes: A20, A22, A29.

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Biographical notes: Umara Noreen is working as an Assistant Professor at Finance Department, Prince Sultan University Riyadh, Saudi Arabia. She completed her PhD from Foundation University Islamabad, Pakistan in 2010. Her area of specialisation is finance. She has an extensive teaching experience of 23 years at undergraduate, graduate and post graduate levels. She has 25 refereed and indexed journal publications, 15 conference proceedings and a published book to her credit. She has delivered a training program to the executives of Riyadh Bank, Saudi Arabia and training under Elite Monsha't PSU program to entrepreneurs held at Prince Sultan University, Saudi Arabia.

1 Introduction

Contemporary businesses organisations demand ‘process oriented’ as an integrated way of learning from graduates. Hence, to address this challenge, business schools are targeting such experiential learning as it contributes to deep learning as well as process orientation (Seethamraju, 2011). Moreover, the experiential exercises stimulate motivation as well as knowledge assimilation (Clarke, 2009). In finance education, simulations are used not only during the course delivery but also as an assessment tool which has been found to enhance student’s performance. Simulation in finance enables to measure the ‘skills’ which cannot be tested in traditional classroom setting. Further, skills acquired can be further enhanced if it involves reflective writing (action research) (Wills and Clerkin, 2009). Researchers have found that simulations have proved to enhance learning process in undergraduate finance courses (Foster et al., 2006).

A myriad of methods have been used by professors to try new experiments for learning motivation and enhancement. However, instruction method is extensively evolving with technological advancement. A survey of 244 AACSB accredited MBA programs showed that simulation programs serve as a connector between theory and practice (Baker and Schomburg, 2003). Stock market trading through simulation has been used by more than 600 finance professors in 600 institutions (McClatchey and Kuhlemeyer, 2000).

It has always been believed that it is necessary to have a blended approach, i.e., a mixture of face to face instruction method with e-learning for better efficiency, quality, and competency (Barboni, 2019). However, online teaching and learning practices have taken a new shift due to Corona virus pandemic. This was accompanied by several challenges both on learners and teaching side. During this challenging time, focus was on ‘adoption’ and not quality since educational institutions around the world was forced on a massive scale to respond to this mode (Carey, 2020). Several platforms have been used for online instructions such as Google Meet, Zoom, Microsoft teams to name a few. Class norms and instruction were shared with the students for online attendance, which made conducting the session’s smooth. These special circumstances during the outbreak of Corona virus pandemic provided the opportunity to explore online learning methods, remote working as well as e-events, for example, webinars and e-collaborations (Favale et al., 2020). There are many advantages that are traced after e-learning was adopted. Lectures are accessible via mobile phone as well as laptops, video recordings of already lectures were available, improvement on internet connection was found (Basilaia et al., 2020).

After the adoption of e-learning, the focus should be on enhancing the quality of virtual teaching (Affounh et al., 2020). This pandemic has made higher education learn new experiences which may become the new normal (LeBlanc, 2020). These e-learning modes are highly relevant in business studies specially finance discipline. It was found that those who participated in simulation games were more motivated and had positive attitude towards their future profession (Sanina et al., 2020). Better engagement in learning process was found with digital games and simulations (Vlachopoulos and Makri. 2017). There is dire lack of research for use of simulation in finance courses in MENA region. Current research focuses on the perception of student’s experience through this innovative method for the first time. Following research questions were addressed in this research.

- Q.1 What is the student's learning experience for using simulation in finance course?
- Q.2 What are the opportunities and challenges for using simulation?
- Q.3 How can simulation enhance learning effectiveness?

2 Literature review

Learning experience and absorption of finance theory and concept is more demanding in term of getting the interaction and the focused learning environment. Therefore, finance educators are concerned about their learning experience which can expose them to link theory with hand on experience to make wise financial decisions. There must be an interaction between learner's needs and environment according to cognitive psychologist (Neisser, 1994). This arrangement allows learners to understand the problem and structure the solution, hence rewarding learners intrinsically.

Kolb (1984) proposed repetitive and a continuous cycle of learning with four forms, i.e.

- 1 observation and reflection
- 2 formulation of abstract/concepts
- 3 testing of concepts
- 4 concrete experience (CE).

This cycle continues with more demands and learners get higher levels to build CE.

Simulation has been recognised a some of the most powerful methods in teaching which enable learners to offer active experimentation (AE) to build CE and repeat the cycle. Since simulation preserves the fear of loss of resources therefore it is highly beneficial for the learners. Therefore, use of simulation has become an area for pedagogic research. Previous researches are in the area of business (Baglione and Tucci, 2010; Lamont, 2001), accounting (Sprouls, 1962; Marriott, 2004) and others (Corbeil and Laveault, 2011; Surdam, 2009).

Importance of having theoretical knowledge remain as it is since a learner cannot apply the concept unless they have a strong grip (Schmidt, 2003). Exposure to the simulation helps improve student's cognitive skills however there is a fear that they might be confused with the overwhelming information (Nelson and Erlandson, 2008). Role of a tutor/instructor still prevails even if the learners are independent for running the simulation. In order to make the simulation experience more fruitful tutors must give pre simulation briefing and assign some tasks to understand the expectations and then continuous guiding until the end of simulation (Leemkuil and De Jong, 2012; Raehsler et al., 1996). There should be debriefing sessions accompanied with the activities and continuous feedbacks to improve the simulations useful.

Simulations when incorporated in the assessment schedule improve student engagement. It is evidenced that formal assessments have shown better and engagement by students as well to achieve learning objectives (Curtin et al., 2011).

Furthermore, replaying the simulation has established to give the students a second chance to improve their cognitive skills and understanding. As in the first round of simulations it is expected that students will do mistakes however in the second round by trial-error method they will be able to have a solid grip on their learning hence building the CE (Leemkuil and De Jong, 2012).

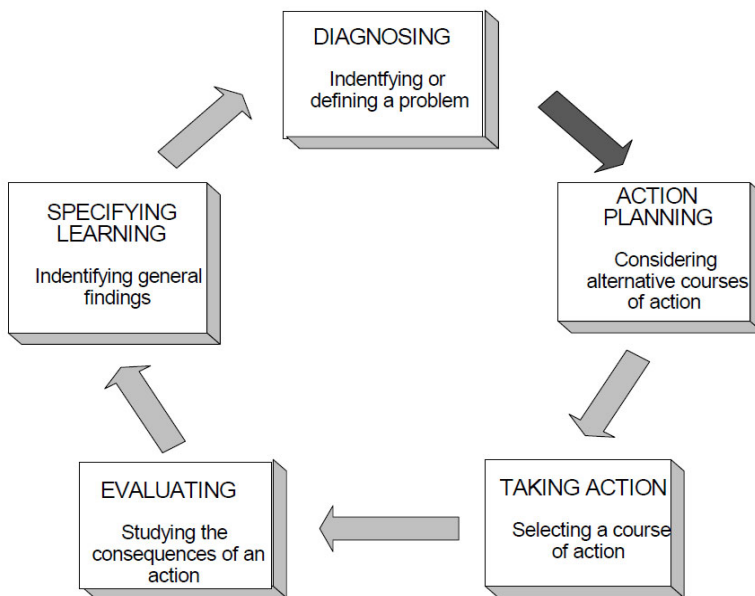
There is a caution related to the sue of simulation game which should be understood correctly. Simulation game itself does not contribute to learning. However, it helps to optimise learning process and to repeat the cycle of learning until the experience becomes concrete (Foster et al., 2006; Chin et al., 2009).

3 Research design

Action research is described as a scientific inquiry that is collaborative, self-reflective and participatory where all the stakeholders (teachers, students, colleagues, etc.) are involved to improve the rationale of their own education practice. It is a study of progress (formative) learning by doing; hence it can be termed as co-learning (Gilmore et al., 1986). This study has employed action research methodology model adapted by Susman (1983). Since this study is based on an outcome based conception of educational efficiency, it links the student’s learning experience with enjoyment, interest and engagement (Athiyaman, 1997; Dana and Dumez, 2015).

Note: in the flow chart below, under diagnosing: change indentifying to identifying.
Also change indentifying to identifying in specifying learning.

Figure 1 Detailed action research model



Source: Adapted from Susman (1983)

4 Data and methods

This study employs Tadawul stock simulator under their knowledge centre (Tadawul. Invest Wisely, 2021). This platform offers free web-based simulation program, with an interface that makes it easy for users to apply what they learned in the classrooms. Online simulation provides interactive charts to monitor the performance of stock as well as to observe the market movements. User can take informed decisions without investing in the real world, hence risk free.

Main features of Tadawul Simulator are as below:

- free and easy registration
- offers all listed securities on Saudi Stock Exchange
- investment of SAR 100,000
- actual market data display
- calculated the trading commission automatically
- option for having multiple order types
- accounts statements for portfolio (if needed).

Stock trading game methodology includes 16 students from College of Business Administration, Prince Sultan University Saudi Arabia. A survey was developed to address the objectives of this study. An instrument was adapted from previous researches made on business simulation games (Parrott et al., 2012; Gopinath and Sawyer, 1999; Dana and Dana, 2005). Questionnaire uses five-point Likert scale. Seven dimensions of learning experience, content understanding, simulator component, enjoyment, class engagement, employability, group behaviour and realism were tested by using ten questions.

Table 1 Presents the detail of dimension with each scale item

<i>S#</i>	<i>Dimension</i>	<i>Scale item</i>	<i>Source</i>
1	Content understanding	Did the simulation games help you understand the concepts discussed in class?	Parrott et al. (2012)
2	Simulator component	Were the game components and financial formulas well updated and organised?	Parrott et al. (2012)
3	Enjoyment	Did you enjoy playing the simulation game?	Parrott et al. (2012)
4	Class engagement	Did you feel the simulation games added interesting discussion to the class?	Parrott et al. (2012)
5	Employability	Do you believe the simulation game prepared you for future employment?	Parrott et al. (2012)
6	Group behaviour	How satisfied are you with the way your group worked together on the game?	Gopinath and Sawyer (1999)
7	Realism	How realistic did you perceive the simulation to be?	Seethamraju (2011)

Figure 2 Question 1 (see online version for colours)

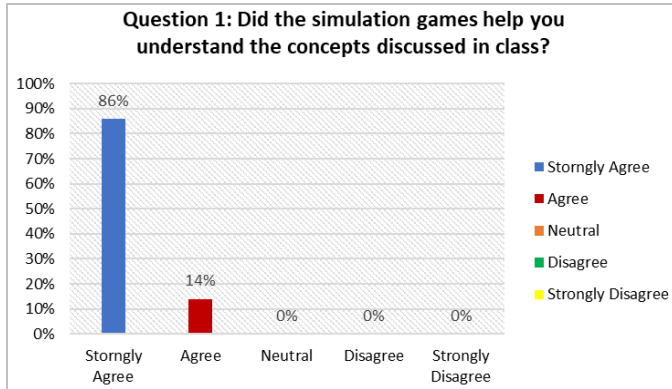


Figure 3 Question 2 (see online version for colours)

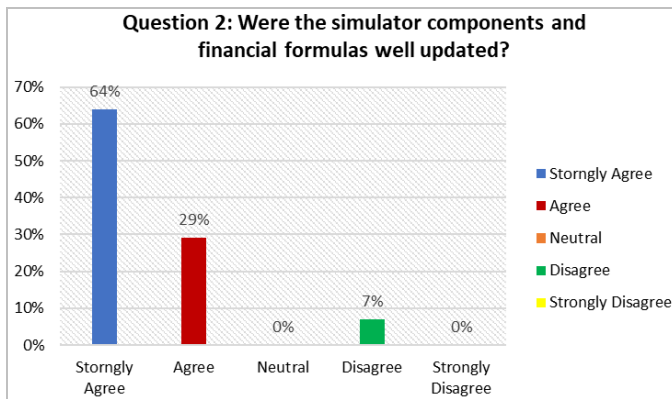


Figure 4 Question 3 (see online version for colours)

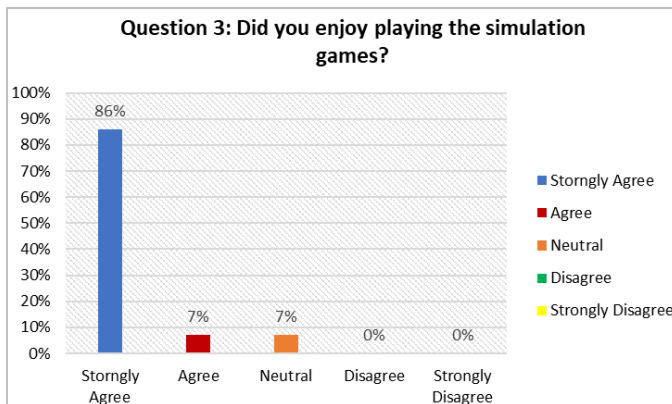


Figure 5 Question 4 (see online version for colours)

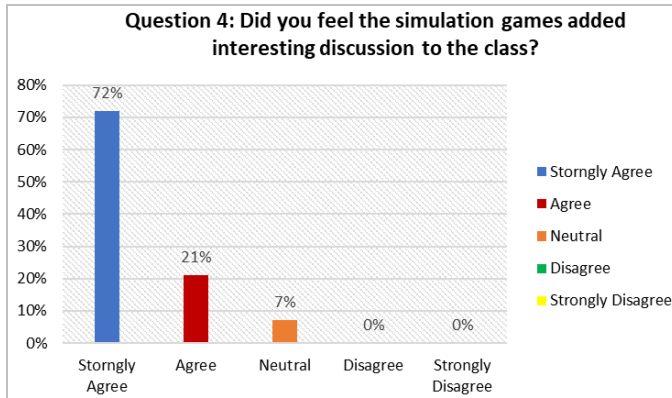


Figure 6 Question 5 (see online version for colours)

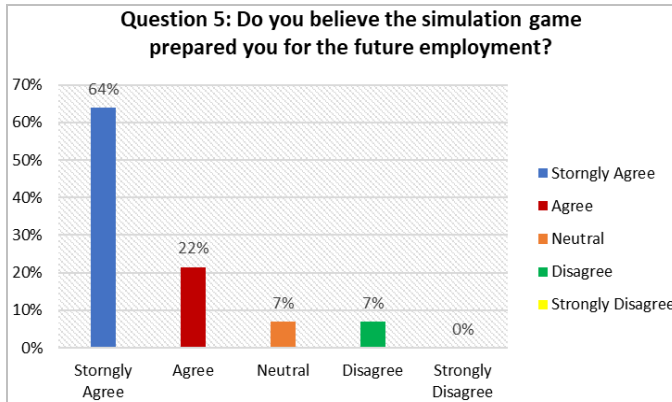


Figure 7 Question 6 (see online version for colours)

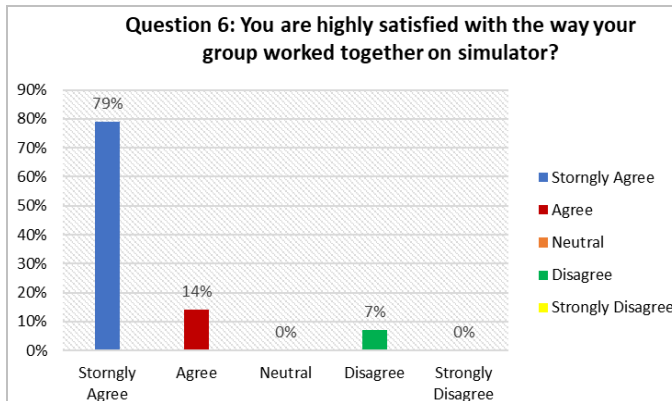
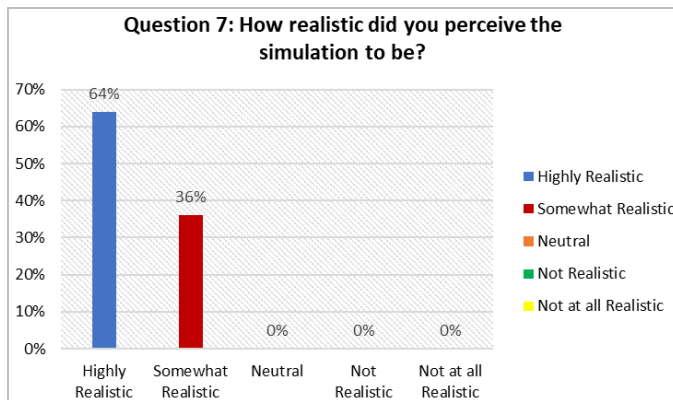


Figure 8 Question 7 (see online version for colours)

5 Results and discussion

Data was analysed by using the descriptive analysis.

a Student reflections

Several researchers described use of simulation in finance as discovery learning, a real world experience and learning by doing (Bruner, 1966; Cebula and Toma, 2000; Coval et al., 2007).

b Best aspects

Identify two best aspects of trade simulator.

To apply what we have learned and easy to use (student#4).

I learned new ways to analyse securities to identify undervalued ones. I was also able to have a real worldview of the stock market and trading of securities (student #9).

We used a new platform that we learned in the classroom (student#12).

To know the market and how it functions (student#5).

c Challenges

Identify at least two challenging aspects of participating in this game.

How to choose the best stock market and using several measurements to assess a portfolio performance (student#4).

Finding information and using function for the first time (student#2).

No tutorials on how to use the simulator (student#5).

Exploring the trade simulator was the biggest challenge for us. However, after using it more and more we became experts in trading using it (student#8).

d Suggestions

Replace the major exam and focus on the stimulation project, so that students can have more time to learn and apply what they learned in the project.

I think everything is perfect, the only suggestion I have is having more than one month to trade. Bring someone to help the girls better understand the stock market. Give them some tips about Saudi market. Let the girls have more time with more explanation.

6 Conclusions

This research investigates the perception of student's experience through simulation. There has been limited pedagogic research in finance education in MENA region. Results revealed that having an innovative and hands-on practice will enhance students' engagement and their learning abilities. Highest percentage of students agreed that they understood the finance concepts very well after playing the simulation game and enjoyed the experience. Results of this study were consistent with the previous research (Marriott et al., 2015; Moffit et al., 2010).

Table 2 Summarises the whole action research

<i>Moment</i>	<i>What's happening</i>
Diagnosis	Low enrolment and less interest in Portfolio Management Course FIN450.
Action planning	Replace traditional way of doing project with simulation. Students were familiarised with new approach of experiential learning.
Taking action	Students were assigned to do two months trading on Tadawul trade simulator.
Evaluating	Feedback was taken and student's performance was monitored and evaluated.
Reflecting	Enjoyed engaging new platform for trading, were able to apply knowledge/skills learned in classrooms.

7 Limitations and future research

Current research was conducted on stock trading game on Tadawul Stock Exchange. Sample size consisted of 16 students only. Analysis was conducted using simple frequency distribution. Future studies should take larger sample size and more sophisticated analysis techniques for analysis. There can be a study on scale development specifically for finance simulation. Moreover, longitudinal studies may be conducted to understand the impact of e-learning and simulation starting from sophomore to senior level students.

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