



This is a peer-reviewed, post-print (final draft post-refereeing) version of the following unpublished document and is licensed under All Rights Reserved license:

**Al Salmi, Sumaiya, Al-Majeed, Salah ORCID logoORCID:
<https://orcid.org/0000-0002-5932-9658> and Karam, Jalal
(2019) Online Exams For Better Students' Performance. In:
9th International Conference on Education, Teaching &
Learning (ICE 19), April 26-28, Wager College, New York, USA.
(Unpublished)**

Official URL: http://globalbizresearch.org/New_York_Conference_2019_April4/docs/doc/4.%20Education/NE946.pdf

EPrint URI: <https://eprints.glos.ac.uk/id/eprint/6803>

Disclaimer

The University of Gloucestershire has obtained warranties from all depositors as to their title in the material deposited and as to their right to deposit such material.

The University of Gloucestershire makes no representation or warranties of commercial utility, title, or fitness for a particular purpose or any other warranty, express or implied in respect of any material deposited.

The University of Gloucestershire makes no representation that the use of the materials will not infringe any patent, copyright, trademark or other property or proprietary rights.

The University of Gloucestershire accepts no liability for any infringement of intellectual property rights in any material deposited but will remove such material from public view pending investigation in the event of an allegation of any such infringement.

PLEASE SCROLL DOWN FOR TEXT.

Online Exams For Better Students' Performance

A Case Study : General Foundation Program Students

Sumaiya Al Salmi
Virtual Learning Environment
Military Technological College
MTC
Muscat, Oman
Sumaiya.alsalmi@mtc.edu.om

Prof. Salah S. Al-Majeed
Electronics Systems Engineering,
Head Engineering and Technology
University of Gloucestershire
Gloucestershire, UK
salmajeed@glos.edu.uk

Prof J. Karam
Systems Engineering Department
Military Technological College
MTC
Muscat, Oman
karamjr@dal.ca

Abstract -This work considers several dimensions of both online and traditional exams on students' performance at Military Technological College - MTC. The dimensions are (attitude, e-learning self-efficacy, perceived usefulness, behavioural intention, interactive learning activities and confidence in using the technology) that have been designed to understand how to improve students' achievements. The research tackles a developed contextual understanding of how the online vs. traditional exams can affect the students' performance. The results clearly indicate that online assessment facilitate the teaching process and provide better students achievements. Through analysing students' results and students' survey, this paper presents two dimensions which can help enhancing students' performance.

KEYWORDS— E-LEARNING; STUDENTS' PERFORMANCE; OMAN; ON-LINE EXAMS; E-LEARNING DIMENSIONS.

I. INTRODUCTION

Nowadays Information and Communications Technology (ICT) contributes positively in all Educational Sectors as other sectors [1]. Educational institutions using ICT as infrastructure through applying its international standardization to determine how it can improve their education systems.

No doubt, that transferring from the traditional of learning way to the modern way by using the technological tools can support the learning process. Since the internet technology is dramatically growing, this resulted in bringing out different forms of e-learning [2].

Applying the concept of ICT efficiency in the educational institution became one of the international issues that focused by many researchers, institutions, organization and communities as completely, it has found that ICT offers new opportunities for the educational institution to enhance and apply the e-learning methods [3].

E-learning is an effective alternative method to traditional face-to-face education. Compared with University education, web-based education makes a great change in its space, time, method of teaching and learning. Many Universities implement e-learning environment to meet students' needs. Since e-Dr

learning is conducted using the Internet and World Wide Web, the learning environment becomes more complicated.

Many researchers expect that e-learning will enhance the educational procedures and effectiveness among the learners ever since it keeps producing new methods and tools [4].

One of the definitions of e-learning is a teaching method in which modern communication tools and computer technologies are used in the context of an interactive process between all involved in the educational process to achieve specific objectives serving both individuals and societies at present and in future [5].

Online exams is one of the techniques that is used in order to evaluate the students' performance by using Internet [6]. This technique is usually used to replace or in line with the traditional methods of evaluating the students [2]. The usage of online assessments increased dramatically within the last decade, that is because the features that are available in the online assessments compared with the traditional ones [7]. The educational environment now turned into modern learning, which depends on the technology tools. E-learning can lead the organization to the competitive advantage in certain ways.

The remainder of this paper is organized as follows. Section II introduces and reviews related research in the literature. The methodology for the study in the paper is described in Section III, while Section IV presents an analysis of the results. Finally, Section V draws some conclusions.

II. LITERATURE REVIEW

This study reflects the desire and urgent need felt by many Omani educators to identify new global developments in teaching and evaluation methods in higher education. The study may contribute to paving the way for faculty members and undergraduate students at Military Technological College –MTC, OMAN to explore this new revolution education as a means of learning, teaching, and evaluation. Thus, educators need to gain better understanding of student's attitudes prior to the integration of the online examination as part of e-learning

into the curriculum. Furthermore, the study adds to the literature a contribution to the body of knowledge about the role of new revolution education in enhancing learning and potentially transforming society.

Starting this literature with Canada's Open University and Athabasca University, which both moved forward to change the way of learning from using the traditional methods to online methods by the mid-1990s [6]. Later on, many institutions were forced to change their way of delivering the methods. The reason behind that is the increasing in number of students from different demographics [7]. The other reasons are; scoring and reporting through online assessment using the new technologies' tools can be more faster, efforts and cost effectiveness [8]. Moreover, there is some skills especially the computer skills needs to be measured using these technologies' tools [8].

The online learning affects at the students' performance and achievement compared with the traditional ways of learning have addressed by [9]. However, another research shows that there were no serious differences between the online and offline learning in the term of the learners (Quizzes scores) [10]. In addition, it has been found that students' performance it is not an appropriate measure to show the differences between the online and offline learning [11].

Many researchers have constantly discussed the advantages of online assessment compared to the traditional assessment. For example, the online assessments can save the students and invigilators efforts in the way that the online assessments do not require pens and papers [11]. Furthermore, it has been suggested that the use of computers in the classroom can increase students' internal motivation and the online assessments can reduce the demands of the teachers since it improves the individualized formative assessment [12]. In addition, the flexibility of the online test can be conducted anytime and anywhere with an immediate feedback [1].

A test has been done by the authors of [13] for 69 participants to measure the anxiety during exams time in both online and traditional exams, in which the results revealed that the students who used to feel anxious while doing the exams did not suffer from anxiety while doing it online. Furthermore, the online assessment increases the security and reduces cheating attempts [1]. On other hand, the level of participation and interaction of the students may be high in the online classes compared with the traditional ones [14].

Nevertheless, there are some obstacles of using the online assessments; for instance, if the test is done remotely, another person instead of the intended students might do the test. Besides, "Independent of publishing a test on a website, there is the notorious threat that any website could suffer outages let alone be hijacked or taken down by a hacker." [5]. In addition, online assessments need to change the class room's environment, teaching materials, strategies and roles that may need more time and efforts [17].

This study therefore seeks to answer the following research question; what are the perceptions of undergraduate students (General Foundation Students) towards applying Online Exam through e-learning?

III. METHODOLOGY

The target population of the study was General Foundation Programme students- GFP students who were studying in first year and have not using online exam through e-learning system elsewhere. The study was conducted at Military Technological College-MTC, Oman is the environment under research study consideration. A group of students was chosen randomly to be the sample of this study.

A. Data collection instruments

In this study, a qualitative method was used. The instruments were developed based on the objectives of the study. The questionnaire was designed to identify attributes of the respondents. To verify the reliability of the questionnaire the researcher distributed questionnaire on sample of fifty six students out of the original sample and used the internal consistency Cronbach Alpha, Table 1.

Table 1. Cronbach Alpha Case Processing Summary

		N	%
Cases	Valid	56	100.0
	Excluded ^a	0	.0
	Total	56	100.0

The reliability of the scale was: Attitude (0.879), E-learning self-efficacy (0.861), Perceived usefulness (0.861), Behavioural intention (0.867), Interactive learning activities (0.878) and Confidence in using technology (0.889). All scales and subscales were greater than 0.7, which according to [19] is considered "acceptable" for exploratory research. The author if [20] has indicated 0.7 to be an acceptable reliability coefficient.

Table 2. Alpha Coefficients for Constructs with Multiple Items

Construct	Number of Items	Cronbach Alpha
Attitude	4	.879
e-learning self-efficacy	3	.861
Perceived usefulness	4	.867
Behavioral intention	3	.866
Interactive learning activities	2	.878
Confidence in using technology	3	.889

The questions were selected to explore and assess both positive and negative students' perceptions of Online Exams through e-learning. The items and constructs were an adaptation of others literatures [21][22] as items have been developed for the study which had nineteen questions and it has been classified into six dimensions, as showed in Table 2. To measure students' responses to the above six dimensions and its questions a 5-point Likert scale questionnaire was used.

B. Participants

The participants consisted of first year undergraduate students (General Foundation Programme students) at the Military Technological College. The students will required to participate in an exam online as a part their programme level.

The survey has been conducted and distributed randomly among 56 students were given traditional and online tests to observe their performance in both approaches.

C. Procedure

The questionnaires were distributed to participants during the class time and the data for this study were gathered by means of a paper. They have been distributed randomly.

D. Analysing data

The answers to each question are coded according to a five-point Likert scale, where typically 1 indicates the least, and 5 the most, favourable rating from an e-learning point of view. Descriptive statistics for all statements were computed for obtaining the mean and standard deviation for all responses. The data will be analysed by using different software functions and tools.

IV. The Results

The fifty eight students were given the same test in two ways traditional and online to measure their performance. The findings of the average of the students results as in Figure 1. show that the students got (6.95%) in their online test while the results increased dramatically to (9.07%).

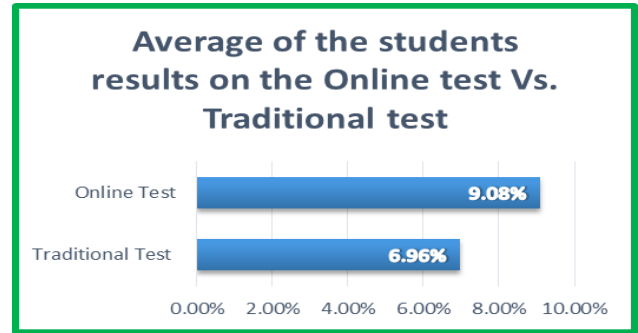


Figure 1. Average of the students results on the online test Vs. Traditional test

Beside the test, a survey was distributed between 56 students in MTC to measure the six dimensions that affect the students’ performance on online vs. Traditional exams.

The finding shows in Figure 2. that 8% of the students are strongly agree that e-learning requires them to master some technical abilities but it doesn’t help them in getting good grades, while 28% of the students did agree that e-learning help them in accomplishing the course outcomes, however they think that it doesn’t increase their grades, in which 35% of the students show neutrality toward the previous criteria and 18% of the students disagree with the students disagree with the attitude’s criteria. The remaining 9% of the students were strongly disagree that e-learning requires technical ability, e-learning is beneficial in getting good grades and e-learning is effective in helping students to accomplish good grades.

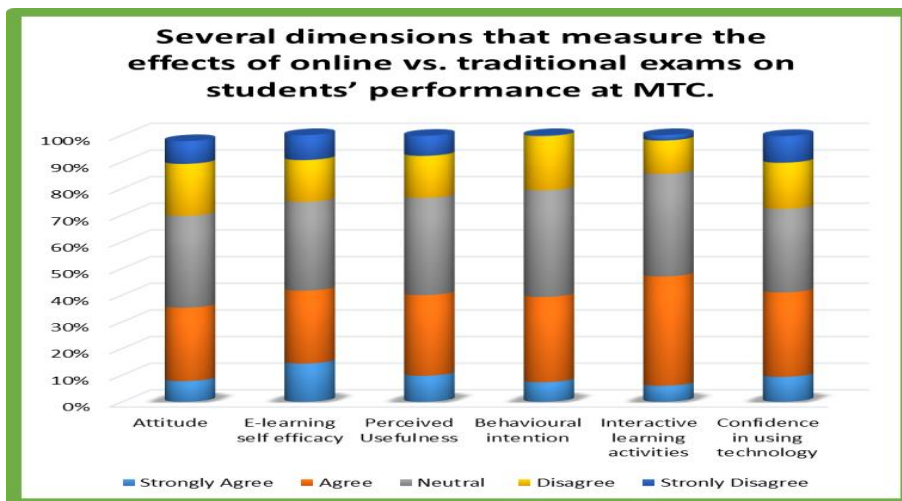


Figure 2. Several dimensions that measure the effects of online vs. traditional exams on students’ performance at MTC.

Moreover, 7% of the students are strongly agree that they do not feel confident while doing online exams. On the other hand they feel confident in learning from an online content. Furthermore, 27% of the students agree that they don’t feel

confident while doing online exams, but they feel confident in studying from an online content, while 33% of the students show neutrality toward the criteria of e-learning self-efficacy and 16% of the students disagree to the criteria

of e-learning and self-efficacy. The remaining 10% of the students were strongly disagree that online tests do not make them confident. Also, they strongly disagree that they feel confident in studying from online contents.

Likewise, 10% of the students strongly agree that they do not believe that the online exams content is informative. However they believe that online exams would not increase their academic productivity. 30% of the students agree that online exams will help them to get better job in the future. While the percentage increase to 37% show neutrality toward the criteria of Perceived Usefulness. While 16% of the students disagree that the online exams will increase their learning performance. The rest 8% of the students strongly disagree.

Similarly, 7% of the students strongly agree that they are going to use the e-learning tools to assist their learning. But, they feel that they are not going to use the e-learning as an autonomous learning tool. While 32% of the students agree they are not going to be heavy user of e-learning. 40% of the students show neutrality toward the criteria of Behavioural intention. In addition, 20% of the students disagree and the remaining percentage strongly disagree.

In the same way, 6% of the students strongly agree that they are able to share their knowledge through e-learning tools. On the other hand, they do not believe e-learning can assist teacher-learner interaction. 41% of the students agree on the Interactive learning activities criteria. While 39% of the students show neutrality toward the criteria of teacher-learner interaction. 13% disagree and 3% strongly disagree.

Moreover, 9% of the students strongly agree that Using e-learning in their course will not increase their confidence in using computers and technology for online exam. Furthermore, the students feel the information technologies used in e-Learning have many useful functions. 32% of the students agree that having-learning to support online exam will improve the quality of the learning. 31% of the students show neutrality toward the criteria of confidence in using technology. While 17% of the students disagree and the rest of the students 10% are strongly disagree.

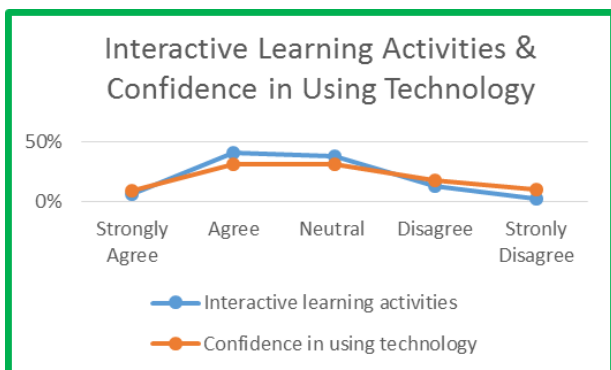


Figure 3. Average of the students results on the online test Vs. Traditional test

Although this research paper explains six dimensions which are (Attitude, E-learning self-efficacy, Perceived usefulness, Behavioural intention, interactive learning activities and confidence in using the technology) that affect the students’ performance. The previous analysis recommended to focuses on two dimensions (Interactive Learning Activities and Confidence in Using the Technology) that are highly affecting the students’ performance in using the e-learning more than others use.

Figure 3. shows a comparison study of the students’ responses focusing on both; the Interactive learning activities and Confidence in using technology and how that’s affect the students’ performance in similar way. The average of the responses for both dimensions are centred in the middle of the chart (Agree, Neutrally and Disagree) they are quite confident in using technology in their online exams. However, they feel that the informational technologies used in e-Learning have many useful functions. Additionally, it improves the quality of the learning. With regard to Interactive learning activities most of the students would like to share their knowledge through e-learning tools. On the other hand, do not believe e-learning can assist teacher-learner interaction. They do not believe e-learning can assist teacher-learner interaction attitude’s criteria. The remaining 9% of the students strongly disagree that e-learning requires technical ability, e-learning is beneficial in getting good grades and e-learning is effective in helping students to accomplish good grades.

V. CONCLUSIONS

In conclusion, e-learning is an important concept that facilitates the learning process for the students in MTC. The study which is presented here focuses on the several dimensions that measure the effects of the online exams vs. traditional exams on the students’ performance in MTC.

To sum up, it is clear from the above findings that the students need to increase their level of awareness on the importance of using e-learning tools in facilitating their learning process. That’s may increase their confidence on using the computer and technology in their online exams which will enhance their performance. In addition, developing and practicing new ways that may deepen the e-learning in the students through using interactive tools. Finally, get rid of all the obstacles that may hinders using the e-learning tools such as: weakness of the network and lack of the experience and resources on how to deal with the technical failures.

VI. REFERENCES

- [1] Liu.Y. (2005). Effects of Online Instruction vs. Traditional Instruction on Students’ Learning. ITDL Journals
- [2] Al- Adwan,A& Al- Adwan,A& Smedley,J.(2013). Exploring students acceptance of e-learning using Technology Acceptance Model in Jordanian universities. International Journal of Education and Development using Information and Communication Technology
- [3] Michael F. Spivey & Jeffrey J. McMillan (2014). Classroom versus Online Assessment, Journal of Education

- [4] Watanabe,K. (2006). A study for needs of e-learning through the analysis of national survey and case study. *Progress in Informatic*, 2, 77-86.
- [5] Saleem, T. A. (2011). "MOBILE LEARNING TECHNOLOGY: A NEW STEP IN E-LEARNING." *Theoretical and Applied Information Technology* Vol. 34 No.2.
- [6] Turau,V&Fahrenholtz,D&Venzke.(1995). *Online Assessment: Goals, Problems, and Experience*. Hamburg Technology.
- [7] Ya,A.Comparing the Effectiveness of Classroom and Online Learning: Teaching Research Methods. *Journal of Public Affairs Education*
- [8] Anderson.T&Elloumi.F. (2004). *Theory and practice of online learning*. Canada. Athabaska University.
- [9] L.Beverly&Kimberly.P&Hary. (2000). *from correspondence to cyberspace: Changes and challenges in distance education*. Web based training
- [10] Bennett,E.(2003). *Online assessment and the comparability of score meaning*. Research memorandum.
- [11] Rivera,J.(2002). A comparison of student outcomes and satisfaction between traditional and web based course offerings. *Online Journal of Distance Learning Administration*, Volume V, NumberIII
- [12] Sungkyoo,H&Jongdae,J&Kyung,L.(2009).Accounting (Study and teaching)Academic achievement (Evaluation)Online education (Evaluation).Academy of Educational Leadership Journal
- [13] Sarrayih,M.(2013). Challanges of online exam, performances and problems for online university exam. *International Journals Of Computer Science Issues*, Vol. 10, 1, 1
- [14] Singh,S&Rylander,H&Mims.T.(2012). Efficiency of online vs. ofline learning: a comparison of inputs and outcomes. *International Journals Of Business*,Vol 2, 1
- [15] Johnson,M&Green,S. (2004). Online assessment: the impact of mode on student performance. *British Educational Research*
- [16] Jeffrey,S&Dan,B.(2010).Effects of Online Testing on Student Exam Performance and Test Anxiety .*Journal of Educational Computing Research*
- [17] Robles,M&Braathen,S.(2002).Online Assessment Techniques.*Delta Pi Epsilon Journal*
- [18] Peter,F.(2002). Future in e-learning consortiums,*New Straits Times [Kuala Lumpur]*
- [19] George, D. and P. Mallery (2003). "SPSS for Windows step by step: A simple guide and reference." 4th ed. Boston: Allyn & Bacon.
- [20] Nunnaly, J. (1978). " Psychometric theory." New York: McGraw-Hill.
- [21] Park, S. Y. (2009). "An Analysis of the Technology Acceptance Model in Understanding University Students' Behavioral Intention to Use e-Learning." *Educational Technology & Society*, 12 (3), 150–162.
- [22] Hammoud, L. (2010). "Factors affecting students ' attitude and performance when using a web-enhanced learning environment." *Information Systems*.