International Journal of Engineering &Technology, 7 (4) (2018) 6189-6191

International Journal of Engineering & Technology

Website: www.sciencepubco.com/index.php/IJET
doi: 10.14419/ijet.v7i4.23127
Research paper



The impact of using e-learning on the student's performance in 3rd developing countries: a pilot study

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Abstract

E-learning is one of the growing areas especially in the higher education. There are several advantages for using e-leaning in the student performance. In third developing countries such as Jordan, important steps were taken for adopting the e-learning system. This is done by providing students with technological and communicational skills as well as to making students more adaptive to the technology of contemporary societies. Several studies have been analysis the effect of the e-learning on the student performance and found that there is a tangible enhancement on the student performance and is considered as key element that positively affect the student motivations. Online courses at Jerash university like; computer skills accessed by students through electronic gate (Moodle).This study used SPSS to analysis the performance of 63 student (32 e-learning and 31 traditional learning).the study found that there are statistically significant differences between the two group in favor of experimental group.

Keywords: *E-Learning; Traditional-Learning; ANCOVA; Jordan.*

1. Introduction

1.1. Literature review

E-learning is one of the growing areas especially in the higher education. It is defined as a using computer tools in the learning process. This type of learning is divided into two main groups; full e-learning (distance learning), where the teacher and the students are in different places. The second one is partial e-learning, where the teacher and the students are in the same place and the teacher used computer as a supporting tool. In this paper we will focus on the first type[1].

E-learning has several advantages for educational institutions, including: democratization of knowledge and more widespread access to information [2], flexibility, facing obstacles related to geographical distance and providing teachers with different learning strategies[3]. As well as, e-learning could help students in boosting cooperation and sharing knowledge between students and teachers from one side and students themselves from another side, providing students with specific resources to meet their needs and to enhance their study skills [4].

E-learning offers new learning environments that were previously unknown like; self-paced learning and self-directed learning. In self-paced learning students can learn any time and any place. So that, students can learn in the time and the place that suit them and free themselves from the constraints of formal learning [3]. On the other hand, in self-directed learning students can learn independently without any interaction with their peers. This kind of learning reinforces the concept of self-confidence, as well as, it gives students an opportunity to learn from their mistake, and they can progress in their learning according to their abilities, potentials and individual differences[5].

There are two main types of e-learning including; asynchronous and synchronous e-learning. In asynchronous e- learning students access the e-learning environment at any time and any place to download information and share this information with both teachers and students such as email and forum. This type gives students enough time to think about complex issues because the sender does not expect a quick response. While, synchronous e-learning was used by teachers and students in order to improve the social domain and to activate the interaction outside the classroom sitting. This type usually supported by media such as video conferencing and chat, which help in developing e-learning environment. synchronous e-learning such as, instant messaging and video conferencing, makes students more motivated and committed toward certain issues, as well as, immediate responses are expected by sender[6].

Currently, E-Learning has become an important strategy of teaching and learning process especially in higher education due to the availability of information and communication technology (ICT) tools. Most of education systems around the world give a great attention to shift from traditional learning to e-learning. In third developing countries, such as Jordan, still there are some limitations face the development of the e-learning including: developing a roles and restrictions that control the e-learning process, the resistance of both teacher and students for substation traditional learning by e-learning, the teacher is not qualified enough to develop an e-learning course and student also is not qualified enough in using e-learning tools[7, 8].

Several studies have been analyzed the effect of the e-learning on the students' performance and found that there is a tangible enhancement on the students' performance and is considered as key element that positively affect the student motivations [9, 10]. Also,

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Ruiz et al., studied the impact of the e-learning in medical education and he found that the e-learning enhanced the performance of the students in comparison with traditional learning [11]. Another study on medical education find that e-learning much better than traditional learning[12].Also, Walter Lumadi[13] compared the performance of 191 students (56 e-learning group,135 traditional group) and find the performances of the student were enhanced by using e-learning method. Another study compared the achievements of 60 students including two groups (30 e-learning, 30 traditional learning). The study found that e-learning is better than traditional learning and there is a significant increase in students' achievement. Also, zareet, et al., [14] compared the knowledge and creativity acquisitions by 40 students divided into two groups (20 e-learning, 20 traditional) in chemistry class. In this study, the results reveal that e-learning is much better than traditional learning.

Moreover, most of previous studies assessed the effectiveness of online courses on students' academic achievement and performance took place in developed countries [15-17]. The current study considered one of the few studies in developing countries, which dealt the impact of online learning on students' performance in higher education.

1.2. Problem statement

Online courses at Jerash University like; computer skills, accessed by students through electronic gate (Moodle).This course is fully delivered online from the beginning of the second semester of the academic year 2016-2017.So that, this study tries to evaluate the effect of the e-learning strategy on student's performance. This is because it is considered as new experiences which have been never assessed before.

1.3. Research questions

This study is built to answer the following research questions:

1) Are there any significant differences in students' academic achievement attributed to the teaching method variable (e-learning mode or traditional mode)?
2) Are there any significant differences in students' academic achievement attributed to the gender variable (female and male)?
3) Are there any significant differences in students' academic achievement attributed to the interaction between the teaching method variable and the gender variable?

1.4. Research objectives

This study tries to find whether the e-learning effect the students' academic achievement or no, the study will also address the following objective:

1) Identify differences in students' academic achievement according to the teaching method and the gender.
2) Identify the interaction between the teaching method variable and the gender variable as well as its effect on students' academic achievement.

2. Materials and methods

The samples of the study contains (63) students, all of them fall in the computer qualification exam for beginners. Those students were registered in computer skills course at Jerash University in 2017. Then the students were divided into two groups; control group which contains (31 students). The students in this group were studying computer skills in traditional way and in face-to-face lecture. The second group is an experimental group which contains (32 students) where the students in this group were studying computer skills through e-learning mode (Moodle).

"ANCOVA is used in experimental studies when researchers want to remove the effects of some antecedent variable. For example, pre-test scores are used as covariates in pre-test, post-test experimental designs. ANCOVA is also used in non-experimental research, such as surveys or non-random samples, or in quasi-experiments when subjects cannot be assigned randomly to control and experimental groups. Although fairly common, the use of ANCOVA for non-experimental research is controversial"[19]. Accordingly, to analyse the research questions Tow- Way- ANACOVA was used because it is an ideal method for dealing with Qusai experimental approach that we used in our research.

Table 1: Distribution of Sample Members According to Gender and Teaching Method Variables

Gender	Teaching method		Total
	Control group	Experimental group	
Female	16	15	31
Male	15	17	32
Total	31	32	63

2.1. Instrument of the study

The tool of the study is an exam with 20 multiple-choice questions that covered the first chapter of the course (IT concepts). This exam was developed and reviewed to fit the course objectives by specialist.

2.2. Validity and reliability of the test

The test of the study was validated by a group of specialist's faculty members with various disciplines such as information technology and curriculum and teaching methods at Jerash University. All their comments, correction and amendments have been taken into account. The reliability of the study was checked through implementing a test on 20 students from outside the study's sample, with a time difference of two weeks. After collecting data and analysing students' responses, the Pearson correlation coefficient was (0.82), which is acceptable for the purposes of the present study.

3. Results and discussions

The quasi experimental approach was used in this study to answer the main research question and study the impact of an independent variables including ; gender (female and male) and teaching method (online learning and traditional learning), on the academic achievement as dependent variable, a comparison was made between the experimental group (online group) and control group (traditional group).

Question one: are there statistically significant differences in students' academic achievement based on gender and group variables and the interaction between them?

To answer this question, the arithmetical averages, standard deviations, and modified arithmetic averages were extracted for students' achievement in computer course based on group and gender variables as shown in the table (3)

Table 2: Mean, Standard Deviations, Were Extracted For Students' Achievement in Computer Course Based on Group and Gender Variables

Method	Gender	Mean	SD	Estimated Marginal Means	Std. Error	N
Online learning	Male	24.80	4.677	24.87	.76	15
	Female	23.16	6.181	23.22	.71	17
	Total	23.93	5.504	24.05	.52	32
Traditional	Male	20.92	4.123	21.40	.74	16
	Female	22.04	4.091	21.39	.76	15
	Total	21.46	4.079	21.39	.53	31
Total	Male	22.80	4.754	23.14	.53	31

	Female	22.64	5.253	22.30	.52	32
	Total	22.71	4.974	22.72	.371	63

To answer the first research question and find out the significance of statistical differences between academic achievements of the students in both groups (traditional and experimental). Two-way (ANCOVA) was used as shown in Table (3).

Table 3: Two-Way ANCOVA for Students' Post-Test in Computer Course in Term of Group, Gender, and the Interaction between Them

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
PRE	906.368	1	906.368	105.055	.000
GROUP	110.351	1	110.351	12.791	.001
SEX	10.806	1	10.806	1.253	.268
GROUP * SEX	10.593	1	10.593	1.228	.272
Error	500.397	58	8.628		
Corrected Total	1533.887	62			

Table 3 shows that there are statistically significant differences at level (0.05) based on the effect of the teaching method, where the value of (F) was (12,791) which is significance at level (0.05). The means in Table (2) indicate that this difference was in favour of the experimental group which is studies by using online group. These results revealed that students in experimental group benefited from online learning features that attract them to be more involved in teaching and learning process which was finally reflected on their academic achievement.

Table 3 also shows that there are no statistically significant differences at level (0.05) due to gender impact, the (F) value (1.253) which is not significant at (0.05).These results may indicate that online learning representing by Moodle is considered as a new experience for both of female and male.

Accordingly, by analysing the output results of the Two-way (ANCOVA) was used as shown in Table (3) we found that, there are no statistically significant differences at level (0.05) due to the effect of the interaction between the group and gender variables, the value of (F) (1.228) which is not significant at (0.05). And that is the answer of the question three of the research.

By comparing the above results with the previous studies [9, 14, 18] we found that our results were compatible with the results of previous studies and the e-learning enhanced the performance of the students. On the other hand , the results of the current study was inconsistency with previous study[17] which indicated that there is a significant difference in students' academic achievement in favours of female.

The interaction between gender and methods was the main results of the current study which was consistency with previous studies such as [16] which indicated that there is no interaction between gander and method variables.

4. Conclusion

In this paper of 63 students (31 e-learning, 32 traditional) were analysed using ANACOVA to answer the main research question (Are there any significant differences in students' academic achievement attributed to the teaching method variable (e-learning mode or traditional mode)? And we found e-learning method was better than traditional method and there are no effect of the gender in the research results, in addition there are no interaction between gender and method variable. In future a larger dataset will be analysed to confirm the findings.The contribution of this study is that evaluating Moodle at Jerash University which is considers an innovative e-learning mean and new experiences in private universities. In addition, the findings give indicators for the effectiveness of e-learning experience compare with conventional way. On the other side, this study is limited to assess the impact of e-learning on students' performance in computer course, further study is recommended to assess the impact of e-learning on students' performance on other courses such as psychology, economy, and sociology. Finally, the current study recommended that expanding the use of e-learning in all facilities at Jerash University as well as in private universities that have same circumstances.

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