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The Effect of Using the Virtual Classroom on the Achievement of the Eighth Grade Students in General Science Subject in Jordan

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Abstract

The primary purpose of this study was to investigate the Effect of Using the Virtual Classroom on the Achievement of the Eighth Grade Students in General Science Subject in Jordan. The sample of the study consisted of 60 students divided into two equal groups. The control group consisted of (30) students and the experimental group consisted of (30) students too. The results of the study indicated that the level of achievement of students in the experimental group was higher than the students in the control group.

Keywords: Virtual classrooms, achievement, Jordanian basic stage schools, general science subject.

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El efecto Del uso del aula virtual en el logro de los estudiantes de octavo grado en la asignatura de ciencias generales en Jordania

Resumen

El objetivo principal de este estudio fue investigar el efecto del uso del aula virtual en el logro de los estudiantes de octavo grado en la asignatura de ciencias generales en Jordania. La muestra del estudio consistió en 60 estudiantes divididos en dos grupos iguales. El grupo de control estaba formado por (30) estudiantes y el grupo experimental también estaba formado por (30) estudiantes. Los resultados del estudio indicaron que el nivel de logro de los estudiantes en el grupo experimental fue mayor que el de los estudiantes en el grupo de control.

Palabras clave: Aulas virtuales, logros, escuelas jordanas de etapa básica, asignatura de ciencias generales.

1. INTRODUCTION

Rapid changes, technological developments and the information revolution or the so-called knowledge explosion characterizes the current era. In recent years, the world has witnessed remarkable advances in development, such as the emergence of new systems of education and learning, which have contributed to a clear change in the patterns of instructional learning and information delivery patterns, as well as the content and form of the curriculum called systems of education and e-learning. E-learning tools.

management systems and different environments have virtual classes that, enabled the sessions of learning simultaneous and asynchronous, and offer courses digitally through the internet, and put direct questions to teachers during interactive discussions, and the opportunity to devote to the tasks of education and teaching as well as improve performance and upgrading the level, dealing with new technology and the acquisition of knowledge, skills and experience.

Education evolved through many stages until reached the virtual classes that simulated traditional classes. These classes contain many services such as whiteboard, chat rooms, video conferences, audio conferences and the exchange between teacher and learners on the one hand and between the learners themselves on the other. They also have an open space so as not to be bound by time or place. Educational studies emphasize the importance of virtual classes in the learning process, and the provision of electronic courses through them. The study of Compton, Davis and Mackey (2009), which in turn confirmed the importance of virtual classes and their continuous increase in the 21st century. They said that more than (44) US states apply virtual classroom system and (20) schools in New Zealand.

Mohammed (2014) study also emphasized the importance of using virtual classrooms in education and learning, and to determine the reality of the use of teaching staff members of the virtual classroom tools at the Egypt University The research tools were applied to a sample of (40) faculty members, and (86) students. The study concluded the agreement by the teaching staff and students on

the need to activate the use of the virtual classroom system tools at the Egypt University.

The virtual classroom environment increases the efficiency of the learning process. It takes into account individual differences between learners. The results of Florence & Parker (2014) study indicate that virtual classes allow students and teachers to communicate simultaneously using voice, image, chat, and interactive whiteboards. The virtual classes enhance the learning of students and increase their interest in learning through them, whether learning is integrated or through the internet. They also facilitate access to students where they are located.

Simultaneous virtual classes are distinct from the asynchronous virtual classes with several features: Direct communication between members of the educational process, and interacting with each other in voice and image, which leads to positive interaction and facilitates the process of feedback because of the learning incentive of students in the virtual classes (Dilani, 2014).

The virtual classes fall under the two main types as determined by Salih (2013) and Mohammed (2014) as the following:

1- Virtual asynchronous classes do not comply with time or place and use non-synchronous electronic software and tools. They allow students to interact with them without restriction. Some are called them self-learning e-learning systems, because the learner can review the educational material and interact with the educational content through the World Wide Web by the environment of self-learning. Non-synchronous virtual classes have many features to pay

attention to, especially when designing virtual classes in terms of the effectiveness of the learner that is felt within the environment of one community. Al – Jamal and Hussein (2015) referred to them as interactivity, like the interaction between the teacher and the learner, and the learner with peers through virtual class. Synchronization means that connects users at the same time with the need for each participant to log into the program to exchange face – to – face electronic messages in a virtual environment.

2- Simultaneous virtual classes are similar to the sectors of study, but the teacher or learner uses tools and software related to a specific time, requires the presence of the teacher and learner at the same time without the limits of time and place. From the tools of virtual classroom synchronous whiteboards that help all learners to participate in writing and video conferences: communicate with the voice, image and text between the teacher and his students, and among the students themselves, and chat rooms in which text is communicated between teacher and students and students with each other.

Several studies and research have pointed to the importance of using virtual classes, and their impact on the outcomes of learning and achievement of learners. One of them the study of Al – Kahtani (2010) which aimed to identify the opinions of the teaching staff about the use of virtual classes in the distance learning program and its importance from faculty staff members' point of view, and identify the difficulties that limit their use in distance learning.

The results of Martin and Parker (2010) study indicate that students enrolled in education technology departments taught through virtual classrooms e-learning course, compared to their peers in blended learning classes, virtual classroom students were more positive than students studying in a blended learning method. While the study of Yousef (2011) confirmed the importance of identifying effective teaching skills to develop the skills of forensic science teachers using virtual classrooms, as well as determining the proposed virtual classroom and its impact on the development of effective teaching skills.

Some studies have pointed out that the virtual classes overcome the learning burden of the learners and abundance of information related to time, and place. The study of Abdul Fattah (2011) indicated that the virtual classes have helped the learner to keep the impact of learning more and longer. And the results of the study confirmed the effectiveness of the program in the experimental group.

Problem of the study:

The study problem stems from the effectiveness of employing e-learning tools in the educational process and improving the achievement level of students. The researcher conducted a personal interview with a sample of (25) teachers who taught the material. The interview was in their workplace. Teachers reported that there was a decline in the achievement level of the basic eighth grade students in the general science. They attributed the reason to the abstract scientific concepts in the material and the difficulty to be under stood by students. It also includes complex scientific topics, and it was

necessary to search for modern teaching strategies to enrich the scientific material and reflect the scientific knowledge and abstract concepts of the scientific material.

Several previous studies, such as Mahmoud (2017), Al – Montashari (2015) and Bani Ahmad (2015) studies, to conduct further studies on the effect of virtual class on students in teaching sciences course in increasing student achievement, and urged the staff of the Ministry of Education to integrate the virtual laboratory with science curricula, and designing of the virtual laboratory software is compatible with the curricula of all stages of study.

The results and recommendations of the National Conference for the development of educational plans and methods of education and scientific research organized by the Ministry of Higher Education and the Center of Columbia University in Jordan in 2010, pointed to the need to activate technological innovations in the educational process. The problem of the study is summarized in the low level of achievement of students in the basic eighth grade in general science course, as demonstrated by the application of the methodological and extracurricular activities of the course material. As a result, the researcher believes in the need to create a learning environment of pleasure and thrill to reflect their abstract knowledge.

The present study aims at the following two sub-objectives:

- Providing an electronic learning environment that allows students to practice their study activities.
- Determining the effect of using the virtual classroom on the cognitive achievement of students in the general science subject.

Importance of the study:

The importance of the study is due to the following:

-Creating a learning environment based on interactive and participatory learning that continues to good learning that takes into account individual differences and provides feedback.

-The prevalence of virtual classes can help solve the problems of positive interaction between students and teachers caused by student's density in regular classes.

Questions of the study:

The question of the study is:

What the Effect of Using the Virtual Classroom on the Achievement of the Eighth Grade Students in General Science Subject in Jordan?

Limitations of the study:

The present study is limited to the following: This study was limited to the unit of "lenses and mirrors" in general science course for the basic eighth grade and the application of the virtual classroom on a sample of eighth grade students at Bilal Ben Rabah typical basic school for boys in Jerash governorate in the second semester of the academic year 2019/2020.

Hypotheses of the study:

The present study seeks to test the following two hypotheses:

- There is a significant difference at ($\alpha \leq 0.05$) between the mean scores of the control group and the mean scores of the

experimental group subjects in the post – measure of the achievement test.

- There is a significant difference at ($\alpha \leq 0.05$) between the mean scores of the experimental group subjects in the pre – measure and post measure of the achievement test.

2. METHODOLOGY

The following two research methodologies were adopted:

1. Descriptive methodology: The researcher used the descriptive methodology in the analysis of previous studies and research in the field, preparing a list of virtual classroom standards, and preparing the theoretical framework for research.

2. Quasi – experimental methodology: The researcher used the quasi – experimental methodology in the application of the proposed virtual classroom of the first unit of the content of the general science subject entitled “lenses” on the study sample and measurement of its impact on achievement.

The Tool of the Study:

The researcher used an achievement test to measure the cognitive aspect of the students, associated with the unit of “lenses” after learning through the virtual classroom.

The study sample:

The sample of the study consisted of (60) students, divided into two equal groups. The control group consisted of (30) students and the experimental group consisted of (30) students.

Procedures of the study.

To answer the study question and test the hypotheses the following procedures were done:

3. RESULTS and DISCUSSION

A theoretical profile was presented on the subject of the study after reading about the literature and educational studies that dealt with the virtual classes, and on the learning outcomes of students in basic stage.

To answer the main study question "What is the effect of the virtual classroom on the development of achievement in the general science course for the basic eighth grade students?" the researcher followed these steps:

1. Determining the study sample. It consisted of (60) students divided into two groups: (30) students for the control group and (30) students for the experimental group.

2. Applying the achievement test before the experiment.

3. Ensure parity of both the control and experimental groups, as follows: The pre-test was applied to the control and experimental groups to ensure their homogeneity, using means, standard deviations

and t-test for two independent samples. The result is shows in Table (1).

Table 1: T-test for two independent samples to test the significance of differences between the control and experimental groups in the pre achievement test

Levels	G	N	Mean	SD	DF	t-v	Level
Total	E	30	3.30	1.75	58	0.605	0.000
	C	30	3.03	1.67			

The results of the final experiment: To verify the first hypothesis: "There is a significant difference at $(\alpha \leq 0.05)$ between the mean scores of the control group and the mean scores of the experimental group subjects in the post measure of the achievement test".

The significance of the difference between the mean scores of the control and experimental groups was calculated in the post application of the achievement test. Table (2) shows the results.

Table 2: Means, standard deviations and t-value for the means of the control and experimental groups in the post application of the achievement test.

Levels	Group	N	M	SD	DF	t-v	Level	Size of the effect

Total	experimental	30	3.30	1.75	58	41.3	Not significance	10.64
	control	30	3.03	1.67				

Table (2) shows that the high level of achievement of students in the experimental group from the control group students. The mean of the experimental group was (21.90). While the mean of the control group was (13.23). The t-calculated value was (41.305) at (0.000). The size of the impact of learning value through the virtual classroom was (10.64), indicating a high degree of cognitive achievement of the basic stage students in the education process.

This result was agreed with the studies of Al - Kahtani (2010), Al - Montashiri (2011) and Mohammed (2014), whose results confirmed the importance of virtual classrooms in increasing the cognitive achievement of students. This can be explained by the learner's freedom to choose the right time to learn, thus increasing his/ her academic achievement. To verify the second hypothesis that states: There is a significant difference at ($\alpha \leq 0.05$) between the mean scores of the experimental group subjects in the pre measure and post measure of the achievement test, t-test for one group was used with the pre and post measures, by the formula of the size of effect. Table (3) shows that.

Table 3: The difference between the pretest and the post test in the achievement of the experimental group

Levels	Measurement	Mean	Standard deviation	Mean differences	Standard deviation of differences	df	t-value	Level of significance	Size of effect
Total	Post test	24.90	2.25	20.400	2.69	29	42.049	Significant	14.36 large
	Pre test	10.30	1.95						

Table (3) shows that there were differences between the post and pre measurements in favor of the posttest measurement. The mean scores of the experimental group in the pre measurement was (10.30). While the mean score of the experimental group in the post measurement was (24.90). The t-value was (42.049). It was significant at ($\alpha \leq 0.05$). The size of the learning value was reached by virtual classroom (14.36). The fixed value of the high effect was (0.8). The effect of the cognitive achievement of the experimental group was significant to the cognitive achievement of the same group when measured before the experiment.

This result was agreed with both the Nantha and Maheswar (2011) studies, which confirmed that the level of cognitive achievement of the experimental group is better after post measurement than in pre measurement, which increases the importance of virtual classrooms in increasing cognitive achievement.

This result can be explained by the fact that the virtual classroom has improved the cognitive achievement of the experimental

group, the development of internet search skills, and the opportunity of collective discussions with the virtual classroom, which increases the cognitive achievement of the experimental group compared with its achievement before the experiment.

4. CONCLUSION

In light of the results of the study, the researcher recommended the following, the need to build the processes of teaching and e learning in accordance with models of specialized design and appropriate educational design to determine the steps and paths. In addition, The need for the Ministry of Education to ensure that each school has a virtual classroom in which it can overcome the problems of student density in traditional classrooms, The need to organize specialized training courses for teachers to develop the skills of using the internet, virtual classrooms and modern teaching methods, Proposed research. Conducting a research on the effect of the use of virtual classrooms on the development of motivation and attitudes among students toward e learning.

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