The Impact of Virtual Classrooms and Google Sites on Teaching Computer Skills Courses: Karak University College-Jordan

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Abstract—This study aimed to investigate the effect of both virtual classrooms and Google sites in teaching computer skills courses in Al-Karak College of Al-Balqa Applied University. The study used two different teaching strategies (WizIQ Virtual Classroom) and (Google Sites). The participants of the study were selected by a simple random sample. They were selected from the students of Al-Karak College of Al-Balqa Applied University who are signed up in a computer skills course which is a compulsory subject. The participants were chosen from different majors for the academic year of 2019–2020. The total number of student's are160. But 50 students (male and female) were collected randomly. They were divided into three main groups. The study showed a number of findings. Most importantly, the results of the group which was taught by (WizIQ Virtual) had better academic achievements than the control group in the post-test also, the group that was taught, according to Google, outperformed the control group Using (WizIQ Virtual) has facilitated their access to the needed information so, they did better. This study recommends instructors and teachers invest and use this strategy i.e., "WizIQ Virtual" in teaching this course. This may be due to various reasons: for example, it increases the academic achievements of the students. The study also recommends the Ministers of Higher Education and Scientific Research apply (Google sites) and (WizIQ Virtual) in teaching this course in all our Jordanian Universities.

Keywords—virtual classroom, google sites, computer skills, higher education, distance learning

1 Introduction

With the beginnings of the twenty-first century and the emergence of the technological and information revolution, especially information and communication technology, the world turned into a small global village, which led to major developments in several fields, including medicine, engineering, and science, as well as the field of education, like all other fields. Because the educational system was designed to make a good human being, the entry of technology into the field of education became inevitable,

as the computer is one of the most prominent innovations produced by modern technology. This is illustrated by the ability of computers to interact with the student through educational programs to achieve various educational and behavioral goals, in addition to shortening the time and relieving the teacher's burden.

The problem of the huge increase in the number of students and the explosion of knowledge and taking into account individual differences are among the most prominent problems facing learners, as they cannot follow up on new knowledge. For this reason, e-learning allows the student the freedom to choose the appropriate time for knowledge acquisition according to his desire, without being bound by a predetermined and binding study schedule. Also, e-learning aims to create an interactive environment full of computer-based applications and global networks [1].

Google applications are among the most important educational applications used on websites in education. Through reviewing Google statistics, and many sites that analyze global web services such as (Google Analytics, and Egg Crazy), it was found that there are forty million students using Google applications in Education processes [2]. International conferences have been held that recommended the use of Web 2 applications in general and university teaching, in order to provide activities and tools for interaction between learners, as well as to consider individual differences. These conferences include (the World Summit on Technology, the Future Bar, held in Cairo, Egypt 2016) and (Technology Education Conference in Palestine held in Gaza City, Palestine 2010).

Also, when talking about web-based learning, it can be considered an educational technology system based on a philosophical basis and modern educational theories in which the learner passes planned and studied experiences within flexible e-learning environments based on computers and networks that support learning processes at any time or place [3]. However, there is still a gap between the way students learn in the classroom and the way students live their lives using second-generation technology (Web 2) that relies on social interaction. This necessitated the emergence of the second generation of participatory e-learning that provides teachers .and students with the opportunity to communicate, collaborate and share during learning [4], by creating a social network between students and teachers in a virtual learning environment in which multiple types of digital educational resources are available, and they can be effectively managed. This is the so-called collaborative environment in the cloud, or what is known as cloud computing [5]. Educators are constantly trying to find the best ways and means to provide an interactive learning environment to attract students' interest by using the Internet, which is one of the most important modern technological developments. This network provides many applications for educational concepts such as virtual classrooms, virtual universities, e-learning, learning and teaching software, and other modern concepts. These concepts have prompted countries to develop their educational systems and modernize teaching and learning methods [6].

Those applications initiate an interactive process between the teacher and the learner and are no longer restricted to a specific place or time because they depend on the Internet, computers or mobile devices such as the phone. There are also applications in which the presence of the teacher and student is not required in one place. Among these applications are virtual classes for distance learning in which information technology, Internet connectivity, and networks are employed to support simultaneous interaction such as speech (chat), video conferencing, electronic board, and others. In these classes,

the student is allowed to hold discussions and implement curricular and extracurricular activities at any time and any place in the fastest and least expensive manner and in a way that enables teachers to teach and evaluate students. In addition, virtual classrooms allow learners to participate in the educational process, without being restricted to a specific place or time, as well as the opportunity for discussion between learners and students [7].

There are also applications that are designed according to standards, as they include multiple media such as videos, images and other files that attract the student's attention to them without the intervention of the teacher and give immediate feedback to the learner, including Google educational applications. These applications are considered among the modern applications in the field of information technology and knowledge, as they were applied in the field of education and training, which led to providing an opportunity for effective participation and interaction among learners [8].

The applications also allow many learners to create and use a private space on the Internet, through a website, which is used to publish information and electronic lessons [9]. The use of virtual classrooms in the educational process is considered one of the most important means aimed at delivering science and knowledge to humans through the Internet and its applications, as well as virtual classrooms contribute to supplying a wide range of valuable educational tools and advanced tools [10]. Also, Google educational applications provide the educational process with benefits such as allowing communication between the teacher and the student more efficiently than traditional methods, as well as providing the teacher with educational means to deliver information to the student, keeping in mind that these applications are free [11]. Earlier studies confirmed the effectiveness of virtual classrooms and Google in effective learning, as they are programs that could conduct the educational process in a way that enables the student to use modern technologies, as these programs allow learning at any time and place. Hence the need to use e-learning applications such as virtual classrooms and cloud computing, such as Google, for their impact on achievement.

2 Study problem

Through meetings and discussions of researchers with faculty members at Karak University College, it was found that students suffer from weakness in the use of computer skills, as the proficiency level test conducted by Karak College revealed that there are students who fail the competency exam, even though they have studied computer skills. The reason for this may be the way it is taught traditionally or theoretically. Therefore, this study came to investigate the impact of new methods, such as Google sites and virtual classrooms, in developing computer skills, as recommended by several studies, such as the Gerges study [12] and Al-Rabaya'a study [13] using e-learning in the educational process. It is noted that there is a lack of computer programs used in teaching computer skills and most of the requirements of study programs in the college, according to faculty members in the college. The problem of the study then centers on finding the impact of teaching in virtual classrooms and Google on students' achievement in the subject of computer skills at Karak College, by answering the study's questions.

3 Study questions

This study looks to answer the following questions:

1. What is the effect of teaching computer skills using virtual classrooms and Google sites on the achievement of Karak University College students?
2. What is the impact of the use of electronic platforms on the extent to which students understand the subjects taught electronically?
3. To what extent do students interact with the materials using these online platforms?
4. What is the impact of the student's technological ability and skill on using electronic platforms?

4 Objective of the study

This study aimed to investigate the effect of using virtual classrooms and Google in teaching computer skills to students at Karak University College. In addition to the main aim, this study seeks to achieve the following:

1. Creating an electronic environment that meets the requirements of distance education to face the challenges facing the educational environment
2. Figure out what skills must be adopted for the success of e-learning.
3. Giving citizens a greater opportunity to receive help from e-learning.

The importance of studying
The study is expected to contribute to the following:

1. Keeping abreast of the current trends of using e-learning as well as training on computerized programs.
2. This study adds a new building block to the theoretical literature that may be useful for future studies.
3. To direct the attention of officials in charge of the educational process to the necessity of conducting programs in which distance education is conducted and the environment is employed.
4. Keeping abreast of the current trends of using e-learning as well as training on computerized programs.
5. Using modern methods that contribute to educational attainment.

5 Theoretical framework and previous studies

E-learning is a form of distance learning, and can be defined as a method of education that uses devices such as computers, communication mechanisms. Networks, and Internet portals to deliver information to learners at the lowest cost and fastest time, as it enables the managers of the educational process to decide the lecture plan and name the student groups receiving e-learning. At the international level, in dealing with information networks, terms include virtual classes.

5.1 Virtual classroom concept

There are many definitions of virtual classes. Nabil [14] defined it as programs and techniques that enable the teacher to communicate with the student, present study tasks, and take part collectively in dialogue, working through information networks and computer devices. In the same context, Wilson [15] defined it as like the traditional classroom in terms of classrooms and interactive boards, in which the teacher or student uses programs and tools at a specific time, but without being restricted to the place, where the interaction takes place directly.

The second type of virtual class is the asynchronous virtual class. Here, the student and the teacher do not meet at the same time. The student enters the time that suits him, navigates between the contents of the virtual classroom, and interacts with the content through the Internet to achieve self-learning. Genrick [16] showed that it is a digital learning environment that allows the elements of the educational process, namely the teacher and the learner, to communicate together, using programs through which interaction takes place directly, and all tools can be accessed in the virtual classroom, such as online sessions using the interactive board to take part in the virtual class.

5.2 Virtual class: Wiziq

There are several definitions of the program Wiziq. Mustafa [17] defined it as a virtual class that can be used through a web browser and supports the Arabic language, but the program interface is in English, and it does not require a specific operating system, it only requires a flash multimedia player. Live lessons can be broadcast and recorded, text chat with the student during the broadcast, live interaction using audio and video, use of interactive whiteboard tools to write, draw or share files and content such as presentations, images, documents, and PDFs.

5.3 Google sites

Google is considered one of the largest global companies that provide search and e-mail services to send messages between individuals, the emergence of the American company Google with the aim of earning profits by working in the field of advertising through the services it provides to users of the site.

Interactive Google applications: The Google search engine is considered the giant of the engines that supply applications and services through the Internet, as it supplies a set of services and applications free of charge and available to everyone around the world [18].

Google educational applications: Google, one of the most famous websites, supplies free collaborative applications, Google Apps. These applications are characterized by several advantages, the most important of which is that they provide teachers with the possibility to take part in activities among learners [19]. Also, interactive Google applications are among the most important websites used in education, where Google statistics show that there are about 40 million students who use Google educational applications [20]. Wilson [15] defined Google Sites as a special site that helps spread electronic lessons and useful information through a special space on the Internet.

6 Literature review

There are many studies that dealt with the effectiveness of virtual classrooms in improving the achievement level of students in computer skills [21]. In the study of Bossman [22] there were statistically significant differences in favor of the learning group through the pattern of synchronous virtual classes. While the study of Al-Hassan and Ashabi [23] emphasized the importance of using virtual classrooms in distance learning programs in Sudanese universities from the point of view of the faculty members in them. Also, Al-Ajaji's study [24] showed that there is a tendency among teachers of learning difficulties programs to teach middle school students using virtual classrooms.

Al-Mubarak's study [25] aimed to identify the feasibility of (virtual classroom) technology in improving the levels of English language achievement of third-year middle school students in the Sultanate of Oman compared to individual computer-supported learning, as well as comparing it with their attitudes toward education in both ways. The study sample included (60) students from the third preparatory class, numbered (704) students who were chosen randomly. The sample was divided into two equal experimental groups. The first group learned through the technology of virtual classrooms and the other through the computer and by the method of individual learning. The results of the study indicate the effectiveness of both methods in improving students' achievement levels, but more in favor of education through virtual classroom technology. The results of the study found the effectiveness of both methods in improving students' achievement levels, but more for the benefit of education through virtual classroom technology. The learners showed an inclination towards both methods but more towards teaching via virtual classroom technology. The study recommended exploiting the capabilities of network software and virtual classroom technology in the process of developing forms of acquiring English language learning skills.

Al-Najjar's study [26] entitled "The effect of employing virtual classrooms in developing computer and Internet use skills among students of the Islamic Call College" showed that there were statistically significant differences in the cognitive test and the post-scientific performance test for computer and Internet use skills in favor of the experimental group.

In a study to compare free and open source virtual classes, five open source systems were compared: DIMdim, Open meeting, Vmukti, Wiziq, and Vyew in terms of the advantages of each of them, such as the total number of users, the possibility of public and private conversation and the extent of Availability of visual communication, uploading and downloading electronic content, availability of the whiteboard, voting, support for different languages, integration with various e-learning management systems, the possibility of hosting internally in the devices and servers of the designated educational institution and externally, and other advantages. The study concluded that the best is the DIMdim program, while all of them are integrated with Moodle, VYEW is not integrated with any system. The study concluded that they all meet the simple requirements only, but when the focus is on quality and other features, the matter is different [27].

Petersen's study [28] sought to provide kindergarten to twelfth-grade teachers with technical skills that help the target student's generation to become able to use modern technologies and employ them in their higher studies and workplaces. To achieve this, the researcher targeted a sample of 20 people; 15 females and 5 males, one of whom holds a doctorate, and eleven others hold a master's degree or higher diploma. he researcher at the University of Hawaii in the United States of America created a complete e-learning template for students of the target stage using Google applications, where the website was designed using the Google Sites service, and the pre and post-test for the students were done using Google Forms). These materials are on his site, and the site is enhanced with educational materials created using Google Docs and videos posted on YouTube.

Rabea'a study [29] aimed to know the opinions of faculty members who joined an advanced skills course in e-learning and to know the opportunity that contributes to employing Google applications in the educational process. The study sample consisted of (18) members of the teaching staff distributed at Al-Quds Open University. The results indicated that most of the Google applications had high practices and that the culture of e-learning is still low among learners. Momen [30] also conducted a study to identify the effectiveness of an environment based on interactive Google applications to develop e-government skills, where the researcher used the descriptive survey method, and the study population consisted of (30) managers. The results showed that there were statistically significant differences due to the achievement of the remote test.

7 Literature gap

The current study was distinguished by the fact that it dealt with a number of lessons on the subject of computer skills for students of Karak College (computers in our lives, types of computers, generations of computers, computer components, the importance of computer use, areas of computer use). hese courses have been supported by a number of multimedia, which combines the presentation of information electronically directly to the student on the Internet from a website and a virtual class, where both the site and the virtual class include computerized lessons in a coordinated and attractive way with sound effects, videos and images that attract the student's attention. In addition to the computerized tests in the virtual classroom and the Google website, where they are called at the time of desire to support the educational material, which may lead to raising the level of achievement of the students of Karak University College in the subject of computer skills and in the rest of the subjects.

8 Research methodology

8.1 Population and sample of the study

The current study population consists of all Karak University College students who are enrolled in the computer skills course as a compulsory requirement for all college students in various disciplines for the academic year 2020–2021. The number of students in the study community is about 160 (Admission and Registration, 2021).

The study sample members were selected in a simple random way from the target statistical community, which consisted of (50) students, which were randomly divided into three main groups, namely (Table 1):

1. The control group, which was randomly chosen, was taught in the traditional way, and includes (20) students.
2. The first experimental group was randomly selected from the study population, taught using the WizIQ Virtual Classroom strategy, and it includes (15) students.
3. The second experimental group was randomly selected from the study population and was taught using the teaching strategy using Google Sites, and it includes (15) students.

Table 1. Relative distribution of the study sample by group

Group	Sample Volume	Total Percentage of the Sample (%)
First Experimental Group: teaching by WizIQ Classroom Virtual Strategy	15	30
Second Experimental Group: teaching by the educational google website	15	30
Control group: traditional teaching	20	40
Total	50	100

8.2 Study variables

First, the independent variables are represented by the method of teaching: it has three levels, the teaching strategy by virtual classrooms (WizIQ Virtual Classroom); teaching using Google Sites; and teaching using the traditional method.

Second: The dependent variable is the direct achievement of students in the test, measured by the total scores obtained by the student in the achievement test designed to measure computer skills.

8.3 Study design

The quasi-experimental approach was adopted in the design of the study, and it is represented by symbols as follows:

EG1: O1 X O1

EG2: O1 X O1

CG: O1-O1

Where

EG1 The first experimental group: Teaching strategy in virtual classrooms. "WizIQ Virtual Classroom"

EG2 Experimental Group Two: Teaching Strategy Using Google Sites

CG control group.

O1 achievement test

X: (Processing) The Virtual WizIQ Classroom Teaching Strategy and The Teaching Strategy Using Google Learning Sites.

8.4 Group equivalency test

To ensure the equivalence of the two experimental groups and the control group, the analysis of variance test was conducted to test the significance of the differences between the means, and Table 2 shows the arithmetic averages and standard deviations of the results of students' achievement according to the pre-test by the group.

Table 2. Average scores of students in the pre-test for the two experimental groups and the control group

Group	Number	Mean	S.D.
First Experimental Group: teaching by WizIQ Classroom Virtual Strategy	20	16.733	3.53
Second Experimental Group: teaching by the educational google website	15	17.466	3.52
Control group: traditional teaching	15	17.947	3.43

It is clear from Table 2 that there are apparent differences between the average scores of students' achievement by groups in the pre-test according to the variable of the teaching strategy. In order to detect the statistically significant differences between the arithmetic averages by groups, the one-way analysis of variance test was used as shown in Table 3.

Table 3. The results of the analysis of variance (ANOVA) to detect the differences in the students' scores by groups in the pre-test

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares (MS)	F	Sig.
Within	12.38	2	6.19	0.51	0.61
Between	561.61	46	12.21		
Total	574.00	48			

It is clear from the results contained in Table 3 that there are no statistically significant differences at the level of significance ($\alpha \leq 0.05$) in the achievement in the pre-test between the control group that was taught using the traditional method, and the first experimental group that was taught using the virtual classroom teaching strategy. "Virtual WizIQ Classroom," and the second experimental that was taught using the teaching strategy using Google Learning Sites, where the calculated (F) value reached (0.51), which is a non-statistically significant value, which indicates the equivalence of the two experimental and control groups in the pre-achievement test.

9 Results and conclusions

This part includes a presentation of the statistical results that were reached, after applying the study tools and data collection, processing, and analysis in order to investigate the impact of teaching using two different teaching strategies, namely the WizIQ

Virtual Classroom teaching strategy and the teaching strategy using Google Sites as independent variables, to measure their impact on the dependent variable represented in the achievement of Al-Karak University College students in computer skills course.

Results related to the first question "is there statistically significant differences at $\propto \leq 0.05$ in the achievement of Karak University College's students in Computer Skills Course attributed to the difference in teaching approach (WizIQ Virtual classroom, Google Sites or traditional method)?

In order to answer this first question, the value of the arithmetic means and standard deviations of the students' achievement scores were first calculated in the first experimental group that studied using WizIQ Virtual strategy, the second experimental group that studied using Google Sites strategy, and the control group that studied in the traditional way on the post-test of computer skills, and the results were shown in Table 4.

Table 4. Arithmetic means and standard deviations of the scores of students in the first experimental group, the second experimental group, and the control group in the post-test

Group	Volume	Arithmetic Mean	S.D.
First Experimental Group: teaching by WizIQ Classroom Virtual Strategy	15	25.400	2.74
Second Experimental Group: teaching by the educational google website	15	24.600	2.55
Control group: traditional teaching	20	18.700	3.01

It is evident from Table 4 that there are apparent differences in the achievement in the post-test between the mean scores of the control group that was taught using the traditional method, the first experimental group that was taught using the WizIQ Virtual Classroom teaching strategy, and the second experimental group that was taught using the teaching strategy using the educational Google sites. To determine the significance of the statistical differences between the arithmetic averages between the students' achievement scores in the two experimental groups and the control group in the post-test at the significance level $\leq \alpha$, 0.05, the combined analysis of variance (ANCOVA) test was used. The results are shown in Table 5.

Table 5. The results of the analysis of covariance ANCOVA to detect the differences in the student's scores in the groups

Source	Type III Sum of Squares	df	Mean Squares	F	Sig.	Partial Eta Squared
Shared Variable	39.06	1	39.06	5.44*	0.025	0.11
Group	505.58	2	252.79	35.20*	0.00	0.65
Error	330.37	46	7.18			
Total	26118.0	50				
Corrected Total	850.49	49				

Note: *Significant at $\propto \leq 0.05$.

The results in Table 5 indicate that there are statistically significant differences between the average scores of students' achievement in the post-test due to the teaching method in the two experimental groups that were taught using the Virtual Classroom WizIQ strategy and the Google Sites strategy, and the control group that was taught in the traditional way according to the post-test, where the value of (F) was calculated for the test as a whole (35.20).

This value is statistically significant at $\alpha \leq 05.0$, which indicates that there are significant differences between the average scores of students' achievement in the test in the subject of computer skills at Karak University College in the two experimental groups and the control group in the achievement in the post-test of the computer skills course due to the difference in teaching method.

To determine the value of the differences between the average scores of students' achievement in the control group and the two experimental groups in the post-test, the adjusted arithmetic averages and standard error were calculated and the Comparison Pairwise test was conducted using the Bonferroni method, after taking into account the students' scores in the pre-test as a covariate; The results were as in Table 6.

Table 6. Adjusted arithmetic averages and standard error

Group	Adjusted Arithmetic Means	Control	WizIQ Virtual	Google Sites
Control	18.59	–	–6.98*	–5.99*
WizIQ Virtual	25.57	–	–	0.99
Google Sites	24.58	–	–	–

Note: *Significant at $\propto \leq 0.05$.

The results of the comparison of adjusted arithmetic means refer to the followings:

First: When comparing the scores of students in the first experimental group that was taught using the WizIQ Virtual classroom strategy and the control group that was taught using the traditional method, it becomes clear that the difference is in favor of the students in the first experimental group who got higher adjusted arithmetic averages than those of the control group. The value of the difference between the arithmetic averages of the students' scores in the first experimental group was (6.98), which is statistically significant at the significance level $\alpha = 0.05$. This result means that the use of the Virtual WizIQ strategy in teaching the computer skills course for students at Karak University College, which was included in the post test, leads to Improving the overall achievement of the computer skills course students at Karak University College compared to the traditional method.

Second: When comparing the scores of students in the second experimental group that was taught using the Google Sites strategy and the control group that was subjected to learning using the traditional method, it becomes clear that the difference is in favor of the students in the second experimental group who got higher adjusted arithmetic averages than those of the control group. The value of the difference between the arithmetic averages of the students' scores in the second experimental group was (5.99) with a statistical significance level $\alpha = 0.05$. This result means that the use of the Google Sites strategy in teaching computer skills to students at Karak University College who

were included in the post-test leads to an improvement in overall achievement in the computer skills course taught to students at Karak University College compared to the traditional method.

Third: When comparing the scores of students in the first experimental group that was taught using the Virtual WizIQ strategy and the second experimental group that was subjected to learning using the Google Sites strategy, it was clear that there were no statistically significant differences at the level of 0.05 between the two groups, as they obtained close adjusted averages. The value of the difference between the arithmetic means was (0.99) and this value is not statistically significance level $\alpha = 0.05$. This means that the use of the Virtual WizIQ strategy and the use of the Google Sites strategy in teaching computer skills to students at Karak University College that were covered by the post-test leads to an improvement in overall achievement in the computer skills course taught to students at Karak University College.

10 Discussion

First: The results showed the superiority of the students from the study sample of Karak University College students who were taught according to the Virtual WizIQ strategy over the students in the control group who were taught in the traditional way in the post test of computer skills. The researchers believe that this result is logical, as the use of the Virtual WizIQ strategy in teaching computer skills has facilitated access to scientific knowledge of the information contained in the computer skills course, expanding the learning process and deepening computer information among students, by increasing their ability to distinguish between information and retention. WizIQ's virtual classroom strategy is characterized by the fact that it relies on logical sequences in communicating information to students, and thus supports the basic components of the learning process by looking or observation, and it also supports the process of understanding computer components and distinguishing between them and the importance of each component. It also increases the ability to organize ideas and link information among students. Moreover, it contributes to overcoming the obstacles that students face in learning, the most important of which is the weak ability to focus, the dispersion of their thoughts, the loss of purpose and the lack of motivation.

With WizIQ's virtual classroom strategy, live lessons can be broadcast and recorded. Text chat with the student during the broadcast, live interaction using audio and video, and use of interactive whiteboard tools to write or draw, or share files and content such as presentations, images, and documents.

In this context, Al-Najjar study [26] showed the importance of the virtual classroom strategy in improving students' educational abilities. This study recommended the importance of employing it in developing the skills of using computers and the Internet among students of the College of Islamic Call. The study of Al-Hassan and Ashabi [23] indicated the importance of using virtual classrooms in distance learning programs in Sudanese universities. Al-Ajaji's study [24] showed that there is a tendency among teachers of learning difficulties programs to teach middle school students using virtual classrooms. These results coincide with the study of Al-Zahrani [5] which aimed to measure the effectiveness of the use of virtual classrooms in the achievement

of third-grade secondary students in chemistry. The results of this study showed that there were statistically significant differences at the significance level (0.05) between the arithmetic averages in favor of the experimental group that was taught using virtual classes. These results coincide with the study of Faiza Mujahid [30] which aimed to measure the impact of using virtual classrooms in teaching history on achievement, developing critical thinking and some electronic communication skills among female students in the College of Education. The study found that there were statistically significant differences in achievement, critical thinking and electronic communication skills between the experimental and control groups in favor of the experimental group that was taught using virtual classrooms.

Second: The results showed the superiority of the students from the study sample of Karak University College students who were taught according to the Google Sites strategy over the students in the control group who were taught in the traditional way in the post test of computer skills.

The researchers argue that this finding makes sense. Because the Google Sites strategy has provided students with the opportunity to integrate previous computer knowledge with new knowledge, this strategy, as indicated by many studies such as morquin [31] helps students to link the student's perceptions with his previous experiences, and then help him in education and academic adaptation, where the importance of the strategy lies Google Sites in the educational process in being a basis for creativity and innovation, and deviating from the ordinary, as it represents a virtual environment, characterized by providing a large amount of information that can help students interact with the study material and expand information about it, to reach advanced stages of knowledge.

YouTube provides a lot of educational videos that can be watched at any time, and the Google Docs service features the opportunity for students to share documents by sending files through Gmail, modifying them, reading them and exchanging opinions among students.

The researchers believe that the Google Sites strategy in the educational process is a key factor in exploiting the intellectual energies of students and heading towards the right path in the educational process, as it increases students' mental abilities in the learning process, and helps in the process of cognitive growth. This strategy includes many situations that increase students' interaction with the educational material. The researchers believe that the most important characteristics of the Google Sites strategy in the educational process are effectiveness and productivity. It also supports the creativity process of students and thus their ability to achieve; Effectiveness is one of the most important advantages of the Google Sites strategy and is closely related to innovation and innovation, and thus the scores of students who were taught with the Google Sites strategy were better than those who were taught in the traditional way.

The researchers also believe that students who have been taught according to the Google Sites strategy have acquired skills that include constantly searching for new skills in the computer, and have the ability to infer by linking different situations, which contributes to increasing their study skills in general.

These results meet with Al-Ruhaili study [6] which aimed to know the effect of using some Google educational applications Gmail, Google Sites, Google Calendar, Google Docs, Google Social Network and Google+ in teaching one of the university's courses.

And measuring the impact of these applications on academic achievement and social intelligence among female students at Taibah University in Saudi Arabia. The study concluded that there is a positive impact of Google educational applications on the academic achievement and social intelligence of female students.

Third: The results showed that there were no statistically significant differences at the level of statistical significance at the significance level of 0.05. Between the scores of the students in the first two experimental groups that were taught using the Virtual WizIQ strategy and the second experimental group that were subjected to learning using the Google Sites strategy, where they got close degrees.

The researchers believe that this result is logical because of the great importance of these two strategies in increasing students' skill in computer subject matter.

11 Recommendations

1. Encouraging teachers of computer skills in universities to adopt the WizIQ virtual classroom strategy in the process of teaching computer skills because of its importance in increasing students' achievement.
2. Encouraging teachers of computer skills in universities to adopt the Google Sites strategy in the process of teaching computer skills because of its importance in interaction between students and increasing their achievement.
3. Recommending to officials in the Ministry of Higher Education and Scientific Research the adoption of the two strategies Google Sites and the WizIQ virtual classroom strategy in the process of teaching computer skills in Jordanian universities
4. Holding training courses for computer skills teachers in universities to demonstrate how to use the Google Sites strategies and WizIQ virtual classroom strategy in the process of teaching computer skills.

12 References

[1] Kaoud, H., El-Shihy, D., Yousri, M. (2021). Online learning in egyptian universities post covid-19 pandemic: A student's perspective. International Journal of Emerging Technologies in Learning (IJET), 16(18), 38. https://doi.org/10.3991/ijet.v16i18.25135

[2] Saleh, Mahmoud Mustafa (2015). The effectiveness of different modes of interaction in virtual classrooms in developing mathematical thinking skills and tendency to virtual learning among secondary school students, unpublished Ph.D. thesis. Faculty of Education, Ain Shams University.

[3] Prevalla Etemi, B., Zulfugarzade, T. E., Sokolova, N. L., Batkolina, V. V., Besedkina, N. I., Sakhieva, R. G. (2021). The qualifications and views of instructors in the distance education system. International Journal of Emerging Technologies in Learning (IJET), 16(22), 17–28. https://doi.org/10.3991/ijet.v16i22.26067

[4] Saleh, Mostafa Jawdat (2015). The most used web tools and services in education, published on the Education Portal. Available at: https://drgawdat.edutech-portal.net/archives/14134

[5] Elazhary, H. (2017). Cloud-based context-aware mobile intelligent tutoring system of technical computer skills. International Journal of Interactive Mobile Technologies (iJIM), 11(4), 170–185. https://doi.org/10.3991/ijim.v11i4.6852

[6] Al-Ruhaili, Taghreed (2013). The effect of using some Google educational applications in teaching the educational technology course on academic achievement, social intelligence, and attitude.
[7] Hamad, Amani (2015). The effectiveness of the Adobe Flash program in the achievement of sixth-grade students in technology in Nablus public schools and their attitudes towards it. Unpublished Master's Thesis), College of Graduate Studies, An-Najah National University, Nablus, Palestine.
[8] Kongchan, C. (2013). How Edmodo and Google docs can change traditional classrooms. A Paper Presented at the Proceedings of the European Conference on Language Learning, Brighton – UK.
[9] Kattoua, T., Al-Lozi, M., Alrowwad, A. A. (2016). A review of literature on e-learning systems in higher education. International Journal of Business Management and Economic Research, 7(5), 754–762.
[10] Sewandono, R. E. et al. (2022). Performance expectancy of e-learning on higher institutions of education under uncertain conditions: Indonesia context. Education and Information Technologies [Preprint]. Available at: https://doi.org/10.1007/s10639-022-11074-9
[11] Shou, Y. (2022). The influence mechanism of virtual experiment teaching on the behavioural intention of distance learners. International Journal of Emerging Technologies in Learning (IJET), 17(19), 46–58. https://doi.org/10.3991/ijet.v17i19.34469
[12] Kongchan, C. (2013). How Edmodo and Google docs can change traditional classrooms. A Paper Presented at the Proceedings of the European Conference on Language Learning, Brighton – UK.
[13] Rabaya, Muhammad (2013). Employing Google applications in the educational process at Al-Quds open university: Challenges and opportunities, a working paper presented to the Conference on Open Higher Education in the Arab World: Challenges and Opportunities, Al-Quds Open University, Palestine.
[14] Nabil, Gad Azmy (2014). Interactive learning environments, Cairo: Dar Al-Fikr.
[15] Wilson, K. (2016). The International Congress on Integrative Medicine and Health (ICIMH), Las Vegas, Nevada, USA May.
[16] Chenrick, (2013). Virtual classrooms and moodle, learning and open source consultancy, wiziq moodle integration.
[17] Mostafa, Abdel Samie (2016). A proposed educational design model for designing a virtual classroom, the Arab society for educational technology. P. 27, Cairo University.
[18] Afnan, Al-Obeid (2013). Tools and applications: Google in the service of education. Knowledge Magazine.
[19] Barry, Al-Hussein (2014). What do you know about free Google applications that can be used in education, New Learning Magazine. Available at: https://www.new-educ.com/applications-google-gratuites
[20] Duffy, P. (2015). Engaging the YouTube-Eyed generation: Strategies for Using web2.0 in I. Katsaris and N. Vidakis. (2021). Adaptive e-learning systems through learning styles: A review of the literature. Advances in Mobile Learning Educational Research, 1(2), 124–145. https://doi.org/10.25082/AMLER.2021.02.007
[21] Mohammed, D. Y. (2022). The web-based behavior of online learning: An evaluation of different countries during the COVID-19 pandemic. Advances in Mobile Learning Educational Research, 2(1), 263–267. https://doi.org/10.25082/AMLER.2022.01.010
[22] A. Bossman, Agyei, S. K. (2022). Technology and instructor dimensions, e-learning satisfaction, and academic performance of distance students in Ghana. Heliyon, 8(4). https://doi.org/10.1016/j.heliyon.2022.e09200

[23] Al-Hassan, Issam Idriss, Ashabi, Hana Awad (2017). The reality of using virtual classrooms in distance learning programs from the point of view of faculty members, Sudan Open University as a model, Journal of the Union of Arab Universities for Education and Psychology.
[24] Al-Ajaji, Ishraq Bint Abdullah (2017). The use of virtual classrooms with middle school students who have learning difficulties, Journal of Special Education and Rehabilitation. Institution of Special Education and Rehabilitation, Egypt 4(16).
[25] Al-Mubarak, Ahmed bin Abdulaziz (2004). The effect of teaching using virtual classrooms over the Internet on the achievement of students of the mechanism of education in education and communication technologies at King Saud University, Riyadh, (unpublished master's thesis).
[26] Tariq Al-Najjar (2014). The effect of employing virtual classrooms in developing the skills of using computers and the Internet among students of the College of Islamic Call. (Unpublished Master's Thesis). College of Education, University of Gaza.
[27] Bojan Milosavljevic, Zoran Nikdie, Bratislav Mikaric, Virtual-Classroom Free Software, The Comparative Analysis, 16th Telecommunication forum TELAOR 2008, Serbia, Belgrade, November, 2008.
[28] Petersen, J. (2013). An introduction and overview to Google apps in K12 education a web – based instructional module. University of Hawaii, at Maniac.
[29] Al-Moamen, Nahla Ashour Safar (2017). Effectiveness of an environment based on interactive Google applications to develop electronic government skills among middle school principals in the State of Kuwait (Master's thesis, Mansoura University, College of Education, Department of Educational Technology).
[30] Mujahid, Fayza Ahmed Al-Husseini (2010). Methods of Teaching Social Studies, Ain Shams University, Egypt.
[31] Morquin, D. (2016).Teachers perception regarding the use of Google classroom and Google dose and their impact on student engagement. Doctoral Dissertation Texas A & M University Kingsoill.

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