THE EFFECT OF SIMULATION PROGRAMS ON ENHANCING SKILLS OF DIGITAL APPLICATIONS

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ABSTRACT

For those who teach digital skills, having strong digital application abilities is crucial. Additionally, the usage of simulation programs is expanding in higher education institutions because of the COVID-19 epidemic. This raised new issues on how to investigate the effects on the growth of instructors of digital abilities in the simulation program. The purpose of this study is to investigate how simulation programs can help teachers of digital skills improve their knowledge of digital applications. Affiliates of the Optimum Investment Program made up the participants, who were split into the experimental and control groups. The experimental group use simulation software to study the "Digital Applications" course. The typical classroom teaching method is used to instruct the control group. A digital application skills observation card was employed as a study instrument to help achieve the study's goal. In comparison to the conventional approach, the findings demonstrated the efficiency of simulation programs in honing the digital application skills of Najran's teachers of digital skills. The outcomes offer crucial proof of the benefits of simulation programs in the research and advancement of the educational profession.

Keywords: simulation programs; digital skills; digital applications; digital skills teachers

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INTRODUCTION

How to attain learning objectives in higher education in the midst of the COVID-19 pandemic is a difficulty. Therefore, it is critical to consider aspects other than time and space in order to increase learning path flexibility [1-3]. More specifically, switching from traditional to online learning is an option if students are not allowed to visit educational institutions [4-6]. Due to the lockdown that followed the outbreak of the pandemic, simulation programs—the most common type of online learning—were used in several colleges to distribute educational materials [7, 8]. In the contemporary global setting, simulation programs are a common technology [9, 10]. A technological product is the simulation program [11, 12]. This is because the environment is adaptable and freely accessible via the Internet. It is also an electronic learning environment [13]. A computer software that offers an expandable instructional course in terms of content, space, and time is another way to describe the simulation program [14, 15]. It has a live audio and video broadcasting interactive learning environment [16, 17]. Students from various areas can participate in a program despite space limitations. Additionally, by recording the lecture, students can watch it at various times, circumventing time constraints [18, 19].

Both students and teachers can benefit from the services provided by simulation programs, which include desktop sharing, simultaneous chat, file and video sharing for instructional purposes, and more [9, 20, 21]. Additionally, an alternative to traditional schooling that allows learning to continue even during the COVID-19 epidemic is online learning via simulation programs [22, 23]. As a result, this epidemic has compelled all instructors and pupils to get ready to carry out their duties in a simulation program [24, 25]. By incorporating Internet technology, the simulation program creates an interactive learning environment where teachers and students can connect, collaborate, explain their ideas, and communicate using well-organized pedagogical and technological procedures [9, 26].

Numerous earlier works investigated simulation programs through analysis and testing. Included in this is the study by Asadi, Khodabandeh [11], Elfeky and Elbyaly [27], which examined undergraduate English language students' perceptions of a simulation program vs a typical classroom. The outcomes demonstrated that the simulation program participants outperformed their peers who attended traditional classes, and the simulation program promoted greater contact between the faculty member and the students. In addition, Hussain Al-Qahtani [18] research looked into how students and professors in the English Department felt about simulation programs. The results showed that the majority of students and faculty members had favorable opinions of the simulation program, and they showed that using the simulation program had improved communication abilities. In addition, Alhawiti [13] studied the impact of simulation programs on students at Community College in Taluk's English language competency in comparison to the conventional approach. The outcome of the English language achievement exam demonstrated the efficiency

of the simulation programs in comparison to the conventional approach in terms of improving English language proficiency [28-30].

On the other hand, digitalization is a transformational process that has already had an impact on many areas of industry and society and is predicted to accelerate and broaden that impact [31, 32]. Digital applications are programs that are used to handle and edit different types of multimedia content (texts, photos, sounds, videos, etc.), since they change the format of the media into a digital one that computers can process and edit (reference). As society's attention turns to the digital age, digital apps on computers and smart devices are growing in popularity [33, 34]. The educational objectives of digital skills teachers can be met with the help of digital application skills [35-37]. Digital application abilities must be mastered by teachers of digital skills [38]. In order to fulfill the teaching objectives of the assigned courses. Given that, their initial specializations are diverse and they are undergoing preparation to be able to teach digital skills courses, the teaching staff that train digital skills teachers in the Najran region report that their digital application abilities are weak. Therefore, this study aims to fill these gaps by investigating the effects of digital applications on the skills of teachers of digital skills in the Najran region using the Collaborate Ultra Experience LTI simulation software environment.

The issue addressed by the current study resulted from the researchers' observation that sizable portions of digital skills teachers in the Najran region who are registered in the Optimum Investment Program fall short in meeting the objectives of the "Digital Applications" course. As stated in the research's introduction, there is a connection between mastering digital application abilities and accomplishing the instructional objectives of digital skills teachers [35, 36, 39]. To put it another way, teachers of digital skills must be adept at using digital tools [38, 40]. In order to fulfill the teaching objectives of the assigned courses [41-44]. This shows that Optimum Investment Program personnel need to improve their digital application abilities in order to help them reach the academic objectives that will be set for them once they graduate from the program. The success of simulation programs in meeting many learning objectives has also been demonstrated by a number of earlier research [11, 18, 45-47]. However, little is known regarding the efficacy of simulation programs in fostering digital application abilities among Najran area teachers of digital skills. In order to determine the impact of simulation programs on the growth of digital application abilities among teachers of digital skills in Najran, the topic of the current research can thus be framed.

METHODOLOGY

In order to determine the impact of an independent variable (simulation programs) on the dependent variable (digital application skills), the research used an experimental approach (with semi-experimental designs), which led to the use of a semi-experimental design known as the pre- and post-design with two groups (experimental), and a female control.

Table 1: Research design

		Treatment	**Post-test**
Experimental Group	Digital applications skills observation card	Simulation programs	Digital applications skills observation card
Control Group		Traditional way	

RESEARCH TOOL

The research instrument was created using scientific procedures, and it was approved to ensure that it was appropriate for usage and use in the study. Whereas the current research calls for the creation of an observation card to assess how well teachers of digital skills do when teaching students how to use digital applications. The researchers using the following steps did the constructing and modifying of the observation card. Identifying the observation card's purpose first, the purpose of this card was to assess the proficiency of digital applications teachers. Identifying the performances on the card, second: This card's final version has (261) sub-skills in addition to (24) major skills.

Third: Quantitative assessment of students' performance: The researchers used quantitative assessment in degrees in order to identify the levels of the participants in each skill. Since the sub-skills within each main skill are interconnected and sequential, forgetting any sub-skill leads to the participant not continuing to perform the following sub-skills. Third: Quantitative evaluation of student performance: To determine the levels of participants in each skill, the researchers utilized quantitative evaluation in degrees. Due to the interdependence and sequential nature of the sub-skills within each main skill, forgetting one sub-skill prevents the participant from performing the subsequent sub-skills.

A checkmark (√) is placed in front of the performance level appropriate for the participant's performance to register their performance. The participant's overall score, which is used to assess how well he performed on the abilities listed on the card, is generated by adding together these scores. As a result, there are (522) total points on the observation card. Fourth: Note card instructions: The researchers considered how clear and detailed the note card instructions should be. The card's purpose is also made clear so that anyone can utilize it correctly. The participant is

instructed to precisely read the information on the card, recognize performance levels, and quantify each level. Fifth: The observation card's original illustration: The observation card was initially created with (24) primary skills and (261) sub-skills that come under the main skills after establishing the observation card's function and the performances that would be recorded on it. The validity and stability of the observation card are examined in step six to confirm its acceptability for use as a tool for evaluating the skills to be performed. In order to confirm this, the validity of the card was examined. by submitting it to a panel of arbitrators and subject-matter specialists in educational technology, curricula, and instructional techniques. This is done with the intention of confirming the validity of the procedural wording of the card, its clarity, the capacity to see the performance, and by confirming the stability of the note card, as well as to check the authenticity of the card. using the Cooper equation to determine the coefficient of agreement between the observers' assessments after counting the number of observers on a single participant's performance.

Research Sample

In the first semester of the academic year 2023, 56 teachers of digital skills who were enrolled in the Optimal Investment Program at the College of Education at Najran University made up the research sample. They were split into the experimental group and the control group. There were (28) participants in the experimental group, and (28) in the control group. The control group takes the "Digital Applications" course the conventional method, whereas the experimental group uses simulation programs. Additionally, using the research tool (Digital Application Skills Observation Card) previously to the two groups was necessary in order to verify the equivalence of the two groups before application

Make Sure the Digital Application Skills of the Two Groups are Comparable

Applying the note card in advance to each participant in the research sample. Additionally, by using the T. test for independent samples to analyze the collected data, it was possible to determine the significance of the differences between the mean scores of the two research groups and confirm their equivalence before the experiment began. The variations in the participants' pre-application ratings using the Application Skills Observation Card are shown in Table (2).

Table 2: Differences between the two research groups' pre-measurements of the applications skills observation card and their significance

Group	M	SD	Mean Difference	T. Ratio	Sig.
Experimental Group	119.3	4.927	2.6	5.843	0.748
Traditional Group	121.9	5.175			

The discrepancies in the mean scores of the two research groups in the pre-application of the applications skills observation card are evident from the previous table. Where the standard (0.05) of statistical significance was not met. In other words, before being exposed to the experiment, the research sample participants' degree of applied digital abilities was uniform.

EXPERIMENTAL PROCESSING MATERIAL

Using simulation programs, teach the material from the "Digital Applications" course (the MATLAB application was used to develop the system that teaches these abilities to the experimental group's pupils). After consulting a number of educational design models to develop procedural steps to help them in the design and production of the lectures delivered, the course material was divided into (7) lectures to convey the educational material. In terms of setting objectives, content, and structuring activities in accordance with the characteristics of the learners, in order to meet the research's goals. Where simulation programs were used to deliver the lectures to the experimental group. Utilizing the features provided by the simulation software application, it provides a better user interface and greater flexibility for users. On the other hand, the control group's classroom received these lectures in the conventional manner.

RESULTS

By using the arithmetic mean scores for the post-application of the digital application skills observation card for both research groups, the main research issue may be resolved. The goal of this study is to determine whether the usage of simulation programs caused any statistically significant changes between the experimental and control groups. The results of the T test to compare the mean scores of digital application skills for the two research groups are displayed in Table 3.

Table 5: Results of the T test comparing the mean scores for the two research groups (experimental and control) in terms of digital application skills

Group	M	SD	Mean Difference	T. Ratio	Sig.
Experimental Group	504.9	4.542	62.4	7.681	0.028
Traditional Group	442.5	5.948			

It is evident from the previous table that the value of "T" for the distinction between the average scores of students in the two groups (experimental and control) for digital application skills was equal to 8.681. Participants in the experimental group received an average score of (504.9). While the pupils in the control group received an average score of (442.5). The value of "t" is thus determined to be statistically significant. In these situations, the statistical significance increases by 62.4 over the control group on average, favoring the higher group, which is the experimental group. As a result, the experimental group, which is taught using simulation programs, is statistically more significant than the control group, which is taught using traditional methods, and we have therefore addressed the primary research question.

DISCUSSION

The "Digital Applications" course looked into the level of proficiency in digital applications among teachers of digital skills in the Najran region who are registered in the Optimum Investment Program. The use of simulation programs, according to the results, had an effect on how well the participants in the experimental group developed their skills for using digital technology. The findings of this study were consistent with those of earlier studies that examined how using simulation programs affected various learning outcomes. In addition to what Asadi, Khodabandeh [11] demonstrated that students who participated in the simulation program outperformed their peers who attended traditional classes in terms of academic performance. Hussain Al-Qahtani [18] also stated that using simulation programs improved communication skills. Alhawiti [13] further confirmed that simulation programs are more effective than the conventional approach for improving English language competency as evidenced by the outcomes of the English language achievement test. Due to the usage of simulation programs inside learning management systems, this did not emerge in earlier studies of disparities between boys and girls in different learning outcomes, and the findings of the current research support this.

RECOMMENDATIONS

- The requirement for training both male and female faculty members in the use of simulation programs in the classroom.
- Utilizing additional technical tools to hone digital application skills.
- Focusing on the growth of digital application abilities across educational levels.

SUGGESTED RESEARCH

- Similar research at the bachelor's level to validate the effectiveness of deploying simulation programs elsewhere.
- Pursuing additional research to investigate the potential for augmented reality-based digital application skill development.
- Conducting research to determine the effects of the project method on the improvement of digital application skills.

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