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Research Article

The Impact of an Augmented Reality Program on Enhancing the Digital Application Skills

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ABSTRACT

This study aimed to know the impact of an augmented reality program on enhancing the digital application skills. The participants were affiliates of the Optimum Investment Program, who were divided into two groups (experimental and control). The experimental group studies the course through an augmented reality program. The control group is taught in the traditional way in the classroom. In order to achieve the objective of the study, a digital application skills observation card was used as a tool for the study. The results showed the effectiveness of the augmented reality program in developing the skills of digital applications among teachers of digital skills, compared to the traditional method.

Keywords: augmented reality; program; digital application; skills.

INTRODUCTION

Augmented reality technology consists of three main components: immersion, participation and interaction, while immersion is associated with a sense of being in the environment [1, 2]. Participation correlates with the degree of motivation to engage the person in a particular activity [3-5]. Interactivity (ranked third) refers to the ability of a computer to detect user inputs and instantly modify the virtual world and actions according to these inputs [6-8]. Since AR technology is a particularly attractive technology, which is one of its important characteristics, it is believed that AR encourages learners to make use of it [9-12]. Several studies have explored the effectiveness of using AR technology for complex tasks [13-15]. Elbyaly and Elfeky [16] show that the use of AR technology supports mutual understanding, leads to consensus, and supports hypothesis testing. A study by Elbyaly and Elfeky [17] showed that AR technology can improve performance time and mental effort on collaborative design tasks. Furthermore, augmented reality technology helps learners engage in real-world exploration, and virtual objects such as texts, videos, and images are complementary elements for learners to conduct investigations in real-world surroundings [18-20]. This technology also enhances interpretation skills, problem-solving, creative thinking, and motivation [21]. Based on the foregoing, the current study attempts an augmented reality program based on images to enhancing the digital application skills.

On the other hand, digitization is a process of transformation that has already affected many parts of industry and society and is expected to increase its transformative speed and impact [22, 23]. Digital applications are programs used to process and edit various multimedia elements (texts, images, sounds, videos, etc.), as these programs convert multimedia elements into a digital form that can be processed and edited by computer (reference). Digital applications on computers and smart devices are becoming increasingly popular as society's focus shifts to the age of digitization [24, 25]. There is a relationship between digital application skills and achieving the educational goals of digital skills teachers [26]. Teachers of digital skills must be proficient in the skills of digital applications [27]. In order to achieve the educational goals of the courses entrusted to them. The teaching staff who teach digital skills

teachers in the Najran region indicate that their digital application skills are low, given that their original specializations are different, and they are being prepared to be able to teach digital skills courses. Therefore, this study seeks to address these gaps by using the augmented reality program on enhancing the digital application skills.

RESEARCH PROBLEM

The problem of the current research emerged through the researchers' observation of a shortcoming in achieving the objectives of the "Digital Applications" course for a large percentage of digital skills teachers in Najran region who are registered in the Optimum Investment Program. As mentioned in the introduction to the research; there is a relationship between digital application skills and achieving the educational goals of digital skills teachers [28-30]. That is, teachers of digital skills must be proficient in the skills of digital applications [31-33]. In order to achieve the educational goals of the courses entrusted to them. This indicates the need to develop the skills of digital applications among the employees of the Optimum Investment Program, in a way that helps in achieving the educational goals that will be assigned to them after passing this program. Several previous studies have also indicated the effectiveness of augmented reality program in achieving many learning outcomes Elfeky and Elbyaly [34], Elfeky and Masadeh [35], Elfeky, Masadeh [36], Elfeky, Najmi [37], Elfeky, Najmi [38]. However, little is known about whether augmented reality program are effective in developing digital application skills among teachers of digital skills in the Najran region. Accordingly, the problem of the current research can be formulated in an attempt to identify the impact of an augmented reality program on enhancing the digital application skills.

METHODOLOGY

The methodology of the research was to use the experimental approach (with semi-experimental designs), which aims to know the effect of an independent variable (augmented reality program) on the dependent variable (digital application skills), and this resulted in the use of a semi-experimental design known as the pre- and post-design using two groups (experimental), and a female control).

Table1. Quasi-experimental research design

		Treatment	Post-test
Experimental Group	Digital applications skills observation card	augmented reality program	Digital applications skills observation card
Control Group		Traditional way	

OBSERVATION CARD

The scientific steps were followed in building the research tool, and it was approved in order to ensure its suitability for use and application in the research. Where the current research requires the preparation of a observation card to measure the performance of digital skills teachers in the skills of digital applications. The researchers followed the following steps in building and adjusting the observation card. First: Determining the purpose of the observation card: This card aimed at measuring the performance level of digital skills teachers in digital applications skills. Second: Determining the performances included in the card: In its final form, this card includes (24) main skills and (261) sub-skills.

RESULTS

To answer the main research question, by extracting the arithmetic mean scores for the post application of the digital applications skills observation card for both research groups. This is to try to find out if there are statistically significant differences between the two groups (experimental and control) due to the use of the augmented reality program. Table (1) shows the results of the T. test to compare the average scores of digital applications skills for the two research groups.

Table1. T test results for comparing the average scores of digital applications skills for the two research groups

Group	M	SD	Mean Difference	T. Ratio	Sig.
Experimental Group	512	4.016	69	5.72	0.029
Traditional Group	443	7.317			

From the previous table, it is clear that the value of "T" for the difference between the mean scores of students of the two groups (experimental and control) in digital application skills amounted to (5.72). The average score of the experimental group participants was (512). While the average score of the control group students was (443). Thus, we find that the value of "t" is statistically significant. In such cases, the statistical significance is directed in favor of the higher group on average, which is the experimental group, by an increase of (69) over the control group. Thus, the statistical significance is directed in favor of the experimental group (higher on average), which is taught the augmented reality program, compared to the control group, which is taught in the traditional way.

DISCUSSION

The level of digital applications skills among teachers of digital skills was investigated in the “Digital Applications” course. Where the results indicated that the use of the augmented reality program had an impact on the development of digital application skills among the participants in the experimental group due to the use of the augmented reality program. The results of this research agreed with the results of other previous researches that looked at the effect of using augmented reality on different learning outcomes. Including what Elfeky, Najmi [39], Elbyaly and Elfeky [40] showed that students who were engaged in the augmented reality performed better than their classmates who studied in the traditional class. What was also revealed by Masada [41] is that the use of augmented reality enhanced communication skills. Masadeh and Elfeky [42] also confirmed the effectiveness of augmented reality compared to the traditional method in terms of developing English language proficiency, which was shown through the result of the achievement test of the English language. This did not appear in previous studies of differences between boys and girls in different learning outcomes due to the use of augmented reality within learning management systems, and this was confirmed by the results of the current research.

RECOMMENDATIONS

- The need to train faculty members on the skills of employing the augmented reality programs in the educational process.
- Using other technical products to develop digital application skills.
- Paying attention to the development of digital application skills at different educational levels.

SUGGESTED RESEARCH

- Conducting similar studies at the bachelor's level to confirm the success of using the augmented reality programs in other environments.
- Conducting further studies to explore the possibility of developing digital application skills with project method.
- Conducting studies to reveal the impact of using the virtual classrooms on developing digital application skills.

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