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ORIGINAL ARTICLE

The Effect of Educational Escape Room on Creativity and Academic Engagement of Elementary School Students

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Abstract

Aim: The present study aimed to examine the effect of the educational escape room on the creativity and academic engagement of elementary school students in the Qur'an course. The research method was quasi-experimental with a pre-test-post-test design and a control group. The statistical population of this research included all the male students of the fourth grade of elementary school in Tehran, from whom 36 students were selected by convenience sampling method. The participants were randomly divided into an experimental and a control group. In this research, a researcher-made educational computer game based on educational escape room strategy was used for the Qur'an course. The experimental group was trained through educational escape room game and the control group was trained through conventional method. At the end of the research, both groups were given a post-test. Descriptive and inferential statistics were used to analyze the data. The research findings showed that the use of educational escape room has a significant effect on students' creativity and academic engagement.
Keywords: Educational game, Educational escape room, Creativity, Academic engagement.

Introduction

The advancement of mobile technologies has brought fundamental changes not only in education but also in societies (Baker, 2022). As a result of this progress, educators and professors in the field of education have used these technologies to facilitate the learning process and create innovative and creative learning opportunities (Aubeux, 2020). According to educational studies, one of the main factors that make students learn is motivation. The research results (Clarke et al, 2017; Clauson et al, 2020; Craig, 2020) showed that effective learning is achieved when learners have interest and internal motivation.

Furthermore, games play an important role in increasing students' motivation and strengthening internal or external motivation (Huang, 2020; Jambhekar, 2020). In recent years, escape rooms have become very popular. "As a new educational approach, the concept of the educational escape room is dedicated to the creation of educational and learning environments" (Morrell, 2020). In fact, educational escape rooms are a game environment in which participants face a series of challenges. They discover clues and solve puzzles to "escape the room" and win.

The present study aimed to examine the effect of the educational escape room and its effect on the creativity and academic engagement of elementary school students in the Qur'an course.

General hypothesis: Using educational escape room in the Qur'an course increases the creativity and academic involvement of elementary school students.

The first hypothesis: Using educational escape room in the Qur'an course increases the creativity of elementary school students.

The second hypothesis: Using educational escape room in the Qur'an course increases the academic engagement of elementary school students.

Methodology

This quasi-experimental study used pre-test-post-test design with a control group. Its statistical population included all fourth grade male students of elementary schools in Tehran. Since the implementation of the present research required special computer facilities, purposive convenience sampling method was used to select a class of 18 students for each of the two groups (experimental and control) and a total of 36 students as the sample size. In this research, a researcher-made educational computer game based on educational escape room approach was used. To collect data, Torrance Tests of Creative Thinking and Reeve's Agentic Engagement Scale (2013) were used. Before the experiment, a pre-test was conducted on the experimental and control groups. Then, the experimental group was trained through the educational escape room game and the other group (control) was trained in the conventional way. At the end of the research, both questionnaires were implemented on the experimental and control groups again. Multivariate analysis of covariance test was used to analyze the data.

Results

Table 1: Results of univariate covariance analysis for creativity variable between two groups

Source of change	Sum of squares	df	F	P value	Effect size	Power
Adjusted model	6400.30	1	2133.43	0.001	0.94	1.00
Y intercept	50.99	1	50.99	0.044	0.12	0.53
Pretest	385.39	1	385.39	0.001	0.51	1.00
Group	5054.28	1	437.12	0.001	0.93	1.00
Error	370.00	32				
Total	708535.00	36				

As seen in Table 1, after adjusting the pre-test scores, the difference between the experimental and control groups is significant in the creativity variable. Accordingly, it can be said that after removing the effect of the pre-test (initial differences), the effect of the educational escape room in increasing the students' creativity was greater.

The second hypothesis: the use of educational escape room increases the academic involvement of elementary school students in the Qur'an course.

Table 2: The results of univariate covariance analysis for the academic engagement variable between the two groups

Source of change	Sum of squares	df	F	P value	Effect size	Power
Adjusted model	8310.50	1	958.34	0.001	0.99	1.00
Y intercept	2.46	1	0.85	0.36	0.02	0.14
Pretest	3563.51	1	1232.80	0.001	0.97	1.00
Group	344.47	1	119.17	0.001	0.79	1.00
Error	92.50	32				
Total	277764.00	36				

As seen in Table 2, after adjusting the pre-test scores, the difference between the experimental and control groups is significant in the variable of academic engagement. Accordingly, it can be said that after removing the effect of the pre-test (initial differences), the effect of the educational escape room in increasing the academic engagement of students was greater.

Discussion and conclusion

The result of the current research showed that educational escape room increases the creativity of elementary school students in the Qur'an course. The results of this research are in line with the findings of Borrego (2017), Huang (2020). Also, the research results of Ferreiro-González (2019), Franco (2019), Friedrich (2019) showed that the educational escape room can increase the participation and academic engagement of students in school, which is in line with the results of the present research. These findings can be explained in that educational games can affect challenge, narrative, rewards, user independence, interaction, and timely feedback; strengthen mastery of knowledge and creative thinking; change behavior; maintain useful learning motivation and engagement, and lead to more academic engagement (Franco, 2019; Friedrich, 2019; Garwood, 2020). It is suggested that educational escape room game be used to increase the level of academic engagement of elementary school students in the Qur'an course.

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