THE EFFECTIVENESS OF AN EDUCATIONAL PROGRAM USING GRAPHICS ON THE COGNITIVE LEARNING OUTCOMES OF SOME BASIC SKILLS IN BADMINTON FOR BEGINNERS (12-15) YEARS OLD

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Abstract

The research objectives to design an educational program using graphics (3D animation) to learn the skills of the forehand shot and the backhand shot in badminton from 12-15 year old beginners at the Nasiriyah Model Forum, and to measure the effectiveness of the educational program using graphics (3D animation) To achieve the cognitive learning outcomes for the skills of the forehand shot and the backhand shot in badminton from 12-15 years of age for the research sample, the researcher used the experimental method with an experimental design for one experimental group. The researcher followed the measurement design (pre-post) for the study group, and the research sample was chosen according to the method Al-Amdiya is one of the beginners of the Nasiriyah Model School, and their number reached (40) beginners between the ages of (12-15). They were divided randomly into (20) beginners for the basic study and (20) beginners for the exploratory study. One of the most important conclusions is that the proposed educational program using graphics It had an effective impact on learning the skills of the forehand shot and the backhand shot in badminton and improved the level of the two skills among beginners. It had a positive and effective impact on the level of cognitive achievement of the skills of the forehand shot and the backhand shot in badminton among beginners. The researcher recommends applying the educational program. Using graphics as an educational means for beginners at the Nasiriyah Sports Forum, as it has proven its effectiveness. Applying the cognitive test for the forehand and backhand skills in badminton for beginners at the Nasiriyah Sports Forum. Conducting studies and research similar to this study for the rest of the badminton skills and for other sports.

Keywords: Educational, program, graphics and cognitive learning.

Introduction

Today's society lives in an era of advanced technology. In every sense of the word. From Ma'an, that is a confirmed fact. No one can deny it. Hardly a day goes by without us seeing an application. A new technology, or we hear about another application in various fields of human life, which follows the path of development in the field of display devices and the production of educational materials. He clearly senses a breakthrough in the transition of these devices from their primitive form to their modern, advanced form, and at the same time they strive. It has much advanced education systems. Countries around the world are struggling to keep up.

That technological revolution and maximum achievement. Possible benefit from its applications. Modern information in the field of information, presentation and production of educational materials (Nadia Hashem, Hanan Malik, 2010, pp. 10, 11)

Badminton is one of the Olympic sports that is characterized by speed and is the most exciting and exciting due to the fast pace of play and the diversity of performance. Skills and the large number of points in one match. The players compete throughout the match in order to win the largest number of points. What draws the attention of those who watch badminton matches are those fast movements, from front to back, or vice versa, or from side to side, to perform motor skills. Different types of activities that require high motor abilities (Amin Al-Khouly. 2001, pp. 178, 174)

Research problem

The researcher believes that the sport of badminton requires the use of educational technology in developing curricula and improving the educational process, in addition to the presence of a teacher who is proficient in his scientific subject and modern technological methods, who is familiar with the use of all the new modern innovations provided by this technology and how to benefit from the tremendous progress in this field to raise the level of beginners. In the basic skills in badminton, which prompted the researcher to build an educational program using graphics (3D animation) and try to identify the extent to which beginners improve in learning some basic skills in badminton.

Research objectives

1. Design an educational program using graphics (3D animation) to learn the skills of the forehand shot and the backhand shot in badminton for ages 12-15 years.
2. Measuring the effectiveness of the educational program using graphics (3D animation) to achieve the cognitive learning outcomes for the forehand and backhand skills in badminton for ages 12-15 years.

Research hypotheses

- There are statistically significant differences between the average scores of the pre- and post-measurements of the research sample in the level of cognitive achievement for the skills of the forehand shot and the backhand shot in badminton, and in favor of the post-measurement.

Research field

- Human field: Beginners in the Nasiriyah Model Forum whose ages range from 12-15 years.
- Spatial field: Nasiriyah Model Forum.
- Time field: from 7/18/2022 to 4/10/2023.

Research Methodology

The researcher used the experimental method with an experimental design for one experimental group, and the researcher followed the measurement design (pre-post) for the study group

The research sample

The research sample was chosen intentionally from the beginners of the Nasiriyah Model School, and its number reached (40) beginners, aged between (12 and 15). They were divided randomly into (20) beginners for the basic study and (20) beginners for the exploratory study.

Devices and tools used in the research

1. Medical scale to measure weight.
2. A rectameter device for measuring length.
3. A stop watch to measure time.
4. A tape to measure distance.
5. Computers to display the educational program and educational discs (CDs).
6. Badminton court, badminton, net.

Data collection methods

- A form to determine the physical abilities associated with the forehand and backhand skills in badminton.
- A form for physical abilities tests related to the skills of the forehand shot and the backhand shot in badminton.
- A cognitive achievement test for the skills of the forehand shot and the backhand shot in badminton.

Form for physical abilities tests related to the forehand and backhand skills in badminton:

Table 1. Shows the frequency and percentage of experts' opinions in determining physical ability tests related to the forehand and backhand skills in badminton

Physical abilities	Tests that measure them	Units	Approved experts		Losch coefficient of content validity
			N	%	
Abdominal muscle strength	Sit-up test with knees bent	N	11	83.31	*0.645
Strength of the muscles of the arms and shoulders	Medicine ball push test with two hands	Meter	3	23.07	-0.538
	Flexion and extension test of the arms from high oblique prone position	N	10	75.91	*0.538
Eye-hand compatibility	Throwing and receiving the ball test	Degree	12	91.62	*0.847
	Passing a basketball against a wall test	N	2	15.38	-0.692
Trunk and thigh flexibility	Standing forward flexion test	Cm	12	92.31	*0.846
	Trunk extension test	Cm	1	7.69	-0.846
Spinal flexibility	Torso flexion test from standing	Cm	11	84.62	*0.692
	Trunk forward bend test from sitting	Cm	2	15.38	-0.692
Agility	Multi-side running test	Sec.	10	76.92	*0.538
	Quinn agility test	Sec.	3	23.08	-0.538
Distinguished strength and	One-arm medicine ball push test	Meter	11	84.64	*0.691

speed of the striking arm					
Precision	Testing aiming by hand inside overlapping circles.	Degree	12	92.32	*0.846

* The test is acceptable (minimum Loch coefficient with 13 experts = 0.538)

Cognitive achievement test for the skills of the forehand shot and the backhand shot in badminton (researcher design):

The researcher prepared a cognitive test to measure the level of beginners in cognitive achievement and the extent of achieving the program's cognitive goals related to the skills of the forehand shot and the backhand shot in badminton, after reviewing references and studies, including Ahmed Al-Bahloul (2017), Salah Brisem Saleh (2014), and Muhammad Al-Maghawri. (2013), Hamdi Ibrahim (2008), Laila Farhat (2001), Wissam Abdel Hussein Salah (2013), Murat turghut (2020), and the researcher followed the following steps in constructing the test:

1. Determine the general goal of the test.
2. Determine educational objectives.
3. Determine the test topics and their relative importance.
4. Determine the scientific material for the test.
5. Formulating the test vocabulary.
6. Determine the type of questions.
7. Preparing the initial image for testing.
8. Test instructions.
9. Prepare the test correction key.
10. Take the test.
11. Determine the test time.
12. Ease, difficulty and discrimination coefficient.
13. The final image of the test.
14. Scientific transactions for the cognitive achievement test.

The researcher followed the steps of constructing a cognitive achievement test for the skills of the forehand shot and the backhand shot in badminton.

Presentation and discussion of the results of the hypothesis:

"There are statistically significant differences between the average scores of the pre- and post-measurements of the research sample in the level of cognitive achievement for the skills of the forehand shot and the backhand shot in badminton, in favor of the post-measurement."

Show the results of the hypothesis

Table 2. Shows the significance of the differences between the pre-measurement, the measurement and the post-measurement in the cognitive achievement test for the skills of the forehand shot and the backhand shot in badminton

Test	Descriptive statistics		Wilcoxon test					Cohen's r effect size
	Pre-measurement	Post measurement	Negative ranks (post measurement is	Positive ranks (post measurement is greater	Equal ranks (two measure	Z	(P)	

					smaller than pre)			than pre)			ments are equal)			
	mean	Std	mean	Std	n	Mean rank	Sum rank	n	Mean rank	Sum rank	n			
Cognitive test (score)	3.00	1.170	36.90	1.586	0	0.00	0.00	20	10.50	0.210	0	3.94*1	0.00*1	0.623

*Statistically significant at 0.05 Effect size: small 0.1 to less than 0.3, medium 0.3 to less than 0.5, large 0.5 and above.

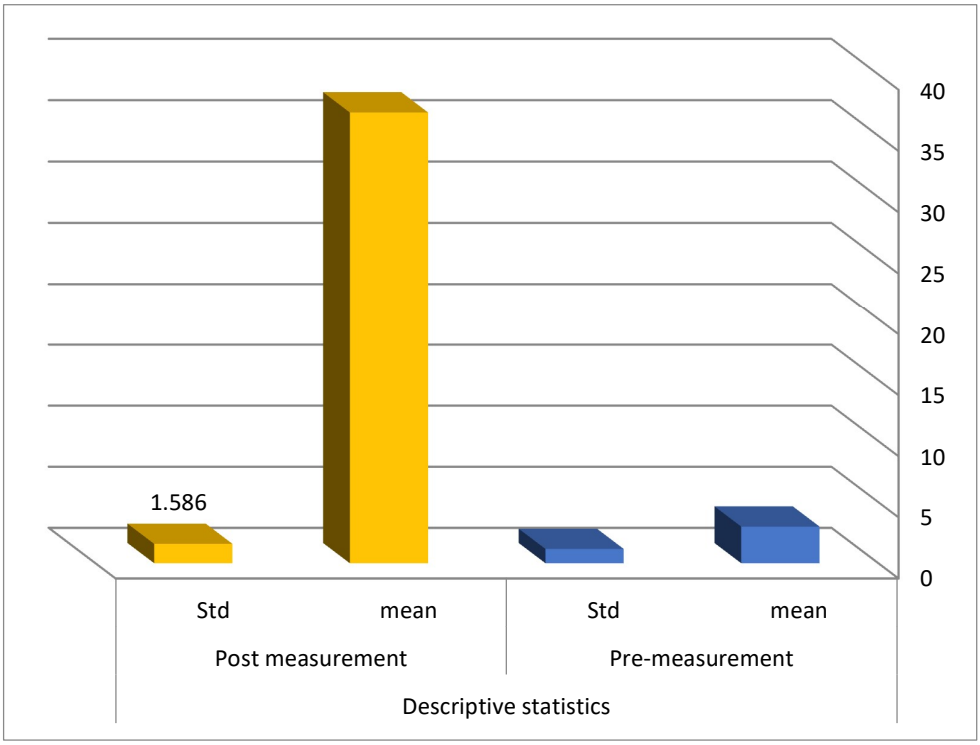

Figure 1. Shows the averages of the pre-measurement and the post-measurement in the cognitive achievement test for the skills of the forehand shot and the backhand shot in badminton

It is clear from Table (2) and Chart (1) that the differences between the pre- and post-measurements are statistically significant in the direction of the post-measurement. The size of the effect is also large, which indicates the positive impact of the program used using graphics in increasing knowledge, understanding, application and the law associated with them in the cognitive achievement test for the skills of the forehand shot and the backhand shot in badminton.

Discussing the results of the hypothesis

The researcher attributes the result to the interaction of beginners with the program

positively and in a way that stimulates their motivation to learn without getting tired of obtaining information. As well as the students' ability to watch the skills display. And control the keyboard, which helps to install it well. It is also presented in an attractive and interesting way for beginners, which makes the learning process fun and exciting, unlike the usual method. The importance of using technological means in the learning process in physical education lies in arousing the interest of beginners, satisfying their need for learning, and enriching their areas of expertise. It also contributes to developing their ability to reflect and accurately observe.

In this regard, Brenda (2000) indicates. Educational media has a positive impact on cognitive achievement in addition to progress in improving skills by presenting different models of these skills using computer programs that display more than one perspective of movement. This helps learners understand and realize these skills and perform them properly. Mahdi Salem (2002) adds that the use of educational media has become a necessity for learners' skill improvement. The use of these different types of media (visual, audio, auditory-visual, and sensory) clearly affects the level of skill performance and cognitive achievement, and that 90% of an individual's experiences are obtained and learned through the sense of sight. (Brenda, 2000, p. 47) (Mahdi Salem, 2000, p. 52)

Known as "Timothy Samara, Timothy S" (2007). Graphic is "a person who takes an idea and then transfers this idea to others in a way that makes them understand the message of this idea. It facilitates the transfer of information to the viewer through exploitation of (lines, shapes, colors, images, tools)."
(Timothy Samara, 2007, p. 12)

This result is consistent with the results of the study of Ahmed Rakha (2003). And the study of Amal Al-Saeed and Safwat Ali (2004). And the study of Ola Abdel Halim (2008). And the study of Iman Qutb and Najla Khalifa (2010). And the study of Ali Khalif (2014). And the study of Ahmed Al-Bahloul (2017). The results of their study indicated that graphics proved effective as an audio-visual educational method, which led to the ease of beginners' comprehension of the skills. It also contributed positively to increasing the motivation of beginners. The program used using graphics (3D animation) also had a positive impact in increasing knowledge and understanding. Application and the law related to them also led to improving the level of cognitive achievement, reducing time and effort, increasing actual application, and increasing and stimulating beginners' motivation for achievement.

From what was previously presented, the validity of the second hypothesis of the research is verified, which states:

"There are statistically significant differences between the average scores of the pre- and post-measurements of the research sample in the level of cognitive achievement for the skills of the forehand shot and the backhand shot in badminton, in favor of the post-measurement."

Conclusions

1. One of the most important conclusions is that the proposed educational program using graphics had an effective impact in learning the skills of the forehand shot and the backhand shot in badminton, and the accompanying level of the two skills improved among beginners.
2. It had a positive and effective impact on the level of cognitive achievement of the forehand and backhand skills in badminton among beginners.

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