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Effectiveness of Cooperative Learning Using Multimedia in Some Physical Abilities and Basic Skills for Junior Players in Basketball

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ABSTRACT

This paper aims to study the impact of cooperative learning using multiple media on some physical abilities and basic skills in basketball for 20 junior players (12-13 years old). This study used the experimental design of two equal groups, and the sample was randomly selected and divided into two groups. The first experimental group used cooperative learning and multimedia, and the second group is control group used the traditional method. Homogeneity was conducted between them in the variables of chronological age, height, and mass after that the educational program for physical and skill abilities in basketball was prepared, as well as preparing a set of physical and skill tests and calculating the coefficient of validity and stability for those tests. The educational program was applied using cooperative learning and multimedia on the experimental group for eight weeks in three educational units per week. After completing the educational program, post-tests were conducted for both groups. The results indicated that there were statistically significant differences between the average achievement of the players who learned basketball skills using cooperative learning and multimedia, and the average achievement of the players who traditionally learned the skills, in favor of the experimental group.

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1. INTRODUCTION

In recent years, educators have paid increasing attention to activities and events that make the student the center of the teaching and learning process. One of the most prominent of these activities is the use of the cooperative learning method, which means arranging students in groups and assigning them work or activity that they do in a cooperative society, "and interest in this method is due to the benefits that students earn to speak In various topics, as learning occurs in a comfortable atmosphere free of tension and anxiety in which aim of students rises in a major way (Ismail *et al*., 2023).

Cooperative learning is considered one of the modern educational methods that call for linking the school reality, which is based on forming a cohesive, heterogeneous group that can be organized into small working groups, in addition, to fulfilling the psychological needs of students on the one hand and communicating the content of the subject to them on the other hand, and gaining their effectiveness within the collective framework, and the learners were able to practice two types of activities "Innovative activities whose mission is to stimulate interaction motives among students and cognitive activities whose mission is to impart knowledge to students and teach them facts and laws, this method also leads to an increase in the effectiveness of education (Mokmin *et al.,* 2023).

Cooperative learning strategies are among the most common educational strategies at present than others, due to their good characteristics, and their importance lies in increasing the achievement of learners at their various levels, encouraging work and social interaction among learners, and helping slow learners and low achievers to learn like normal learners. It has positive aspects in increasing learning and understanding, improving and developing thinking of all kinds, tendencies, and scientific trends, it also works to provide the learners with the skills aspects through teamwork based on cooperation and is keen on disciplining souls and creating positive bonds between students based on tolerance and cooperation and eliminating the selfish tendency that some learners possess. Working with groups is a natural system for life, and learning in this way combines the individual and social growth of the learner, which may move away from the negative individual characteristics that are based on competition, selfishness, vanity, and others.

"Basketball is considered one of the collective cooperative games that require good physical, skill and psychological performance to achieve positive results, and for this reason, learners should be at an equal level of those abilities that achieve the required educational goals." From here, the importance of cooperative learning emerged in that it eliminates many obstacles between students, whether social, psychological or cognitive, and makes learners in continuous interaction, it also develops their self-confidence and reduces conflicts between them, and provides students with opportunities to work in groups, where each student feels that he is an active partner in the educational situation and has a responsibility and certain roles that he must practice in order for the work that the group has assumed responsibility to be complete, it also provides students with educational situations in which they practice scientific thinking skills and discovery and investigation behavior, It also provides students with educational situations in which they practice scientific thinking skills, discovery and investigation behavior, and develop many skills such as knowledge acquisition skills and social skills by activating the role of the learner in the educational process, whether in large groups or in small groups as optimal methods for delivering information to the learner and motivating him to Participate and contribute effectively in the educational process, which may ultimately lead to raising the level of learners in particular and the educational process in general.

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2. RESEARCH PROBLEM

The educational process has evolved recently as a result of the development of societies, the spread of knowledge, and the use of modern technology, and based on educational research that took into account the steady increase in learners' awareness and their needs, the traditional style of teaching and learning has changed and a modern type or types have been created that are compatible with the scientific development in the education process and the existing knowledge awareness. In society, what was included in this development was the search for new educational methods and methods that could develop the old methods, and advance the learning process to its best levels, where weakness in understanding of learning threatens to improve the level of performance in basketball, especially in the initial stage of learning, so the learner has this understanding It is easy for him to perform without hardship and effort, and thus it is easy for him to learn the various basic skills, through the this study's work in the field of teaching and training basketball, he noticed that there is a decline and weakness in the players' physical and skill levels, Perhaps the main reason for this is due to the weakness of the level of education in its various patterns and levels, and that this weakness becomes increasingly clear and wide in the patterns and higher levels of understanding, and that the learners in general were not provided with adequate educational assistance to help them overcome these difficulties and problems, in addition, there is a significant increase in the number of learners compared to the available capabilities, which has placed many educational and organizational burdens on the teacher and trainer (Rosete *et al.,* 2022). The role that multimedia plays is inseparable from learning strategies, there are still many teachers and trainers who follow the method of explanation and model, and an education that is not supported by modern educational technologies, which requires the need to use cooperative learning to provide the teacher’s effort for guidance and counselling, as well as the use of multimedia and providing learners with feedback to correct errors in aspects of learning.

The research aims are the following:

(i) Identify the effectiveness of cooperative learning on some physical abilities and basic skills of junior basketball players.

(ii) Identifying the effectiveness of cooperative learning using multimedia on some physical abilities and basic skills for junior basketball players.

Research hypotheses are the following:

(i) There are statistically significant differences between the pre and post-measurements of the control group in some physical abilities and the basic skills of junior basketball players in favor of the post-test.

(ii) There are statistically significant differences between the pre and post-measurements of the experimental group in some physical abilities and the basic skills of the junior basketball players in favor of the post-test.

(iii) There are statistically significant differences between the two post-measurements in some physical abilities and the basic skills of the control and experimental groups for junior players in basketball and in favor of the experimental group.

Before explaining the results, several terms were used:

(i) Cooperative Learning. "It is a teaching strategy in which small groups are used and each group includes different levels of capabilities who practice cooperative learning activities that improve performance and study of required skills, and each member of the group

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must learn and help his colleagues in the group to learn and thus create an atmosphere of achievement, achievement and pleasure During learning.

(ii) Multimedia. "It is an educational system consisting of a group of materials that integrate with each or and interact functionally in an educational program to achieve its goals and organize the media in arranging a tight sequence."

3. METHODS

The experimental method was used in two groups, one experimental and the other a control group, employing pre and post measurement, due to its suitability to the nature of the research.

3.1. The research sample:

The research sample was chosen by the intentional method from the players of the Specialized School with basketball for juniors in Basra Governorate, at the specific ages (12-13 years) and their number is 45 players. They were divided into two equal groups; each group contains 10 players. This study used the homogenization method in the variables (age - height - mass). **Table 1** explains this matter. It is clear from **Table 1** that all the values of the torsion coefficient are confined between +3 and -3, which indicates the homogeneity of the research group. This study also used the equivalence method in the basic research variables (physical and skill) under study, and **Table 2** shows the detailed information. It is clear from **Table 2** that there are no statistically significant differences between the two research groups in the basic variables under study, which indicates the equivalence of the sample.

Table 1. The arithmetic mean, standard deviation, median, and skewness coefficient for the research sample.

Body measurements	Unit Measurement	Mean arithmetic	Standard deviation	Median	skewness
Age	Year	**12.485**	**0.855**	**12.500**	**0.714**
Height	Cm	**158.000**	**2.360**	**160.000**	**0.925**
Mass	Kg	**57.590**	**3.240**	**0.550**	**1.050**

Table 2. The equivalence of the two research groups for the basic variables under investigation.

Variables	Measurement Unite	Experimental Group		Control Group		T Value Collected	Level of Significance
		M	S	M	S		
Speed	Sec	5.36	0.15	5.40	0.17	1.400	Random
Throw a medical ball of 2 kg	M	4.15	0.23	4.16	0.24	0.944	Random
Hop (5) hops	M	7.88	0.21	7.85	0.23	0.982	Random
Passing	Sec	8.25	1.20	8.28	1.21	1.001	Random
dribbling	Sec	24.10	1.62	24.15	1.58	1.003	Random
Shooting	degree	17.56	1.98	17.53	1.87	1.400	Random

Table T value at a level of 0.05 = 2.10

3.2. Data Collection Means

3.2.1. Physical Ability tests

Table 3 is the relative percentage of expert opinions, and number of appendixes for physical elements and tests, as this study satisfied 75% or more.

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Table 3. The percentage of expert opinions for the physical abilities and tests under consideration.

Physical abilities	Percentage (%)	Test	Percentage (%)
speed	85	Run of 30 meters from high start	87
Characteristic strength of speed of the arms	90	Throwing a medical ball weighing 2 kg	78
Characteristic strength of the speed of the two legs	92	hop (5) hops for each leg	86

3.2.2. Skill tests

Table 4 shows the percentage of the opinions of 3 experts for skills in basketball and its tests, where this study was satisfied with 75% or more.

Table 4. The percentage of expert opinions on the skills in basketball and the tests under consideration.

Skill Variables	Test	Percentage (%)
Passing	Passing Speed	80
Dribbling	Dribbling speed	85
Shooting	Shooting speed and accuracy	90

3.2.3. Tools

Tools and devices used in this study are Computers, CDs, stopwatches, Medical scales for measuring weight, Movies, Plasma screens, Cones, Basketballs, Medical balls, and Metric tape measures.

3.3. Exploratory Study

This study conducted an exploratory study on a sample of 10 players from the research community and outside the main sample, on 15 Jan 2023, to find scientific transactions for the physical and skill tests under study (Samson & Agboola, 2022).

3.4. Calculating the validity of the tests

It is clear from **Table 5** that there are statistically significant differences between the privileged and non-discriminated groups in the physical abilities and skill variables under study, where the calculated T value was greater than its tabular value under the level of 0.05, which indicates the validity of the physical and skill tests in measuring what they were designed for (Calixtro, 2021).

3.5. Stability

To calculate the stability of the physical and skill tests, this study used the method of applying the test and repeating it on a sample of 10 students, with a time interval of 7 days between the two applications, then finding the correlation coefficient between the first and second applications, and **Table 6** shows the stability information.

The correlation coefficients between the first and second applications of the physical tests ranged between 0.779 and 904, and the correlation coefficients for the skill tests ranged between 0.754 and 0.907, which are statistically significant correlation coefficients, which indicates the stability of the tests.

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Table 5. The significance of the differences between the privileged and non-discriminatory groups in the physical and skill tests under study.

Variables	Measurement Unite	Privileged Group		Non-Discriminatory Group		T Value	Level of Significance
		M	S	M	S		
Run of 30 meters from high start	Sec	5.10	0.11	5.56	0.45	19.452	moral
Throwing a medical ball weighing 2 kg	M	5.25	0.38	4.15	0.56	3.812	moral
Hop (5) hops for each leg	M	9.85	0.24	7.80	0.36	14.791	moral
Passing Speed	Sec	6.55	0.95	8.24	1.21	3.338	moral
Dribbling speed	Sec	17.31	1.26	23.66	1.62	8.717	moral
Shooting	degree	11.47	1.75	17.50	2.10	8.256	moral

Table T value at 0.05 = 2.10

Table 6. The correlation coefficient between the first and second applications of the physical and skill tests under study.

Test	Measurement Unite	First Applications		Second Applications		Correlation (R)
		M	S	M	S	
Run of 30 meters from high start	Sec	**5.37**	**0.16**	**5.39**	**0.16**	**0.904**
Throwing a medical ball weighing 2 kg	M	**4.16**	**0.24**	**4.18**	**0.25**	**0.779**
Hop (5) hops for each leg	M	**7.85**	**0.23**	**7.86**	**0.24**	**0.809**
Passing Speed	Sec	**8.25**	**1.22**	**8.23**	**1.20**	**0.755**
Dribbling speed	Sec	**24.12**	**1.61**	**24.11**	**1.60**	**0.907**
Shooting	degree	**17.55**	**1.95**	**17.53**	**1.96**	**0.754**

(R) Table value at 0.05 = 0.44

3.6. The Educational program

This study designed educational units for the experimental research group through this study's teaching and educational experience and reference framework for experts to ensure suitability for the research goal, this study prepared all the multimedia: written texts, images, files, and sound effects, and prepared all the media according to the required format to clarify what can be explained and simplified for the learners. This study prepared the videos required for motor performance by filming models of the performance of some players and showing some models of basketball players applying their skills properly. Contents of educational units were determined under research in 3 educational units per week by 24 units, and unit time reached 60 minutes, and time distribution of educational unit was as follows **Table 7**.

3.7. Main experience

There are several steps:

(i) 2-7-1 Pre-test. The pre-test was conducted on the two research groups (experimental - and control) for physical and skills tests in basketball under study, on 15 Jan 2023.

(ii) 2-7-2 The main experience. The basic experiment was applied to the two research groups; the control group used the method of explanation and the model, while the experimental

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group used cooperative learning using multimedia. Units per week 24 educational units, and the time of the educational unit (60 minutes).

(iii) 2-7-3 Post-test. After completion of the application of basic experience of control and experimental research groups, post-measurement was conducted in physical and skill tests under research on 21 March 2023.

2-8 Statistical processors. Some statistical laws were used, which were represented by the following: - average arithmetic - standard deviation - coefficient of twisting - correlation coefficient - Test (T) to indicate differences.

Table 7. Time distribution of educational unit.

Parts of The Educational Unit	Time (Min)	Basketball Activity
Administrative works	5	Receiving players
Using multiple media	15	Cognitive activity using computers, movies, and videos
Physical preparation	10	Physical preparation exercises for basketball
Educational activity	10	Explanation and teaching of basketball skills
Applied activity	15	Special exercises to teach basketball skills with error correction
Finish	5	Relaxation and breathing exercises
Total	60	time of unity

4. RESULTS AND DISCUSSION

It is clear from **Table 8** that statistically significant differences between pre and post-measurements in the experimental group in physical and skill variables in favor of post-measurement, as the value of calculated (T) was greater than its table value.

It is clear from **Table 9** that there are statistically significant differences between the pre and post-measurements in the control group in the physical component (running = 30 m) and in the skill variables (passing speed and dribbling speed) in favor of the post-measurement. The calculated (T) value was greater than its tabular value, and it is clear from the table that there are no statistically significant differences between the pre and post-measurements in the physical elements (throwing a medicine ball - and 5 hops) as well as for the skill variable (Shooting), where the calculated T value was less than Its tabular value is below the level of 0.05.

Table 8. The significance of the differences between the pre and post-measurements of the experimental group in the physical and skill variables under study.

Test	Measurement unite	Pre-Test		Post-Test		T Value	Level of Significance
		M	S	M	S		
Run 30 meters from a high start	Sec	5.37	0.16	5.12	0.13	3.025	moral
Throwing a medical ball weighing 2 kg	M	4.17	0.26	5.31	0.24	20.794	moral
Hop (5hops for each leg	M	7.87	0.26	9.81	0.27	6.495	moral
Passing Speed	Sec	8.27	1.19	6.48	0.88	23.040	moral
Dribbling speed	Sec	24.15	1.63	17.30	1.21	38.810	moral
Shooting	degree	17.57	1.93	11.25	1.84	10.280	moral

(T) Table value below the level of 0.05 = 1.833.

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Table 9. The significance of the differences between the pre and post-measurements of the control group in the physical and skill variables under study.

Test	Measurement unite	Pre-test		Post-test		T Value	level of Significance
		M	S	M	S		
Run 30 meters from a high start	Sec	5.37	0.16	5.32	0.15	2.405	moral
Throwing a medical ball weighing 2 kg	M	4.17	0.26	4.22	0.23	1.504	moral
Hop (5) hop for each leg	M	7.87	0.26	7.85	0.25	0.779	moral
Passing Speed	Sec	8.24	1.18	8.35	1.21	3.814	moral
Dribbling Speed	Sec	24.17	1.60	24.11	1.59	2.721	moral
Shooting	degree	17.55	1.94	17.22	1.87	1.443	moral

(T) Table value below the level of 0.05 = 1.833

It is clear from **Table 10** that there are statistically significant differences in the two post-measurements of the experimental and control groups in the physical and skill variables, and in favor of the experimental group, the calculated (T) value was greater than its tabular value.

Table 10. The significance of the differences between the two post-measurements of the experimental and control groups in the physical and skill variables.

Test	Measurement Unite	Experimental Group		Control Group		T Value	Level of Significance
		M	S	M	S		
Run 30 meters from a high start	Sec	5.12	0.140	4.32	0.37	12.892	moral
Throwing a medical ball weighing 2 kg	M	5.31	0.102	4.22	0.39	3.933	moral
Hop(5) hops for each leg	M	9.81	0.410	7.85	0.13	10.781	moral
Passing Speed	Sec	6.48	0.420	8.35	0.18	12.898	moral
Dribbling Speed	Sec	17.30	0.560	24.11	0.29	19.543	moral
Shooting	degree	11.45	0.270	17.22	2.85	6.039	moral

The tabular value of (T) is below the level of 0.05 = 1.734

It is clear from **Table 7** that there are statistically significant differences between the pre and post measurements in favor of the post measurement in the experimental group, which uses cooperative learning using multimedia in all physical and skill variables in basketball, where the this study believes that the learners' transition to cooperative learning, which gave them the opportunity to participate positively in learning, as the focus of the educational process moved from the teacher to the learners, and their use of multimedia organizing the rules of work by raising the incentives and motives of the learners led to competition between groups to obtain advanced positions, which helped them in Get effective positive results "However, the use of cooperative learning has a positive and effective effect as an important method in learning, and it also contributes to helping them build positive attitudes towards learning and the educational material, and thus improving their performance" (Ledesma *et al.,* 2021). As it is clear from Table 8 that there are statistically significant differences between the pre and post-measurements in favor of the post-measurement in the control group, which uses explanation and model in the physical component (30 m for sprint) as well as in the skill variables (passing speed and dribbling speed) in basketball this study attributes this to the experience of the coaches in training basketball and focusing on that physical element and those skill variables to their application of the technical and educational stages in

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performance and identifying them through direct observation of the learners and identifying the deficiencies and correcting the mistakes made by the learner. By reviewing Table 9, it is clear that there are statistically significant differences between the two post measurements of the experimental and control groups, in favor of the experimental group, which used cooperative learning using multimedia in all physical and skill variables in basketball, the this study attributes this positivity to the positive impact of the educational program according to cooperative learning using multimedia and what it includes of the many roles of the group leader, which are performed by each learner during the educational unit (leader-determiner-encouraging-critic), which leads to an increase in his awareness and perception of the correct technical performance on developing and improving his physical fitness as well as his technical performance which means the use of this method provides the learner with many and varied sources, where he understands and dialogues with the members of the group, and what it includes of instructions and descriptions of performance and motor path, and this is what would give the learner a correct and clear mental perception of "the superiority of the group that used the method of cooperative learning with multimedia over the group that used the method used." (Explanation and model) (Hidayatullah *et al.,* 2022). Working in a collaborative learning method using multimedia has helped the learners to arouse their interests and motivate them to make efforts in learning and not to feel bored and to have a good and clear understanding of the skills and their better assimilation, which helped to improve the physical and skill level in basketball. 'The multimedia method, with its diverse and distinct capabilities, can increase the effectiveness of the learning method, as well as the excitement, positivity, and motivation of learning and motivate it to acquire the skill aspects more effectively and positively'.

5. CONCLUSION

In the light of the objectives and hypotheses of the research and through statistical treatments, this study reached the following conclusions:

(i) The proposed educational program using multimedia helped in the effectiveness and improvement of the physical abilities of the learners in basketball.
(ii) The proposed educational program using multimedia has helped effectively and positively in learning and improving the basic skills of learners in basketball.
(iii) The experimental group that used cooperative learning and multimedia outperformed the control group that used explanation and model in the physical elements and skill variables under study.
(iv) The proposed educational program using cooperative learning and multimedia achieved positive results in the game of basketball when learning the skills of the learners.

In light of the results of the research, this study recommends the following:

(i) The application of cooperative learning using multimedia in improving the physical elements due to its effectiveness and positive results in the physical results under study.
(ii) Application of cooperative learning using multiple media in learning basketball skills because of its effective and positive effects on physical results at search.
(iii) Inclusion of modern learning methods supported by multimedia within the educational and training units in basketball.
(iv) Conduct more studies that use cooperative learning and support it with modern technological means to raise efficiency in the educational process of basketball learners.

This study recommended the necessity of using modern strategies such as cooperative learning and multiple media effectively in teaching basic ball skills and using multiple

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educational media, and need to train teachers and coaches to use modern educational strategies and conduct more studies on the effectiveness of cooperative learning in developing basketball skills and conducting Studies and research on the effectiveness of cooperative learning and use of multiple media in learning basic skills at all educational levels.

6. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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