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e Effect of the Jigsaw Strategy on Learning the Long Over-the-Shoulder Basketball Skill for First-Year Students in the College of Physical Education and Sports Sciences

Yasser Mahmoud Wahib[a*], Asan Hassan Jawad[a] , Yasser Samir Mahdi yassir[a], Muhannad Faisal Khalaf Jassim[b]

[a]Al-Muqdad College of Education , University of Diyala, Iraq
[b]Presidency office , University of Diyala , Iraq
**Email : basicspor8te@uodiyala.edu.iq*

Abstract : The study aims to employ the Jigsaw Strategy to learn the skill of long over-the-shoulder passing and to identify its impact on the research sample. The study hypothesized that the strategy used has an impact on learning the skill of long over-the-shoulder passing in basketball. The experimental approach was used, and the research population was represented by first-year students in the College of Physical Education and Sports Sciences / University of Diyala for the academic year (2024-2025), numbering (512) male and female students. The study sample was randomly selected from students in sections (A-D), with each section numbering (45) students. (15) students were selected as a exploratory sample. Six-week educational units were prepared for the experimental group, after which a pre-test was conducted for both research groups. The educational units were then implemented for the experimental group, while the control group studied using the teacher-led method. The researchers then statistically analyzed the results, revealing that the results of the differences in the pre- and post-tests for the experimental and control groups indicated significant differences in favor of the experimental group. Through the research results, the researchers concluded that employing the Jigsaw Strategy had an impact on learning the long over-the-shoulder basketball skill for first-year students in the College of Physical Education and Sports Sciences

Keywords: *Jigsaw Strategy , Handling ,Basketball, general sport*

أثر استراتيجية جيكسو (Jigsaw) في تعلم مهارة المناولة الطويلة من فوق الكتف بكرة السلة لدى طلبة المرحلة الأولى في كلية التربية البدنية وعلوم الرياضة

ياسر محمد وهيب *[1], اسان حسن جواد[1] ,ياسر سامر مهدي ياسر[1], مهند فيصل خلف جاسم [2]

[1] كليه التربيه المقداد , جامعه ديالى , العراق
[2]رئاسة الجامعه , جامعه ديالى , العراق

المستخلص: تهدف الدراسة إلى توظيف استراتيجية جيكسو (Jigsaw) في تعلم مهارة المناولة الطويلة من فوق الكتف بكرة السلة والتعرف على تأثيرها في أفراد عينة البحث. وافترضت الدراسة أن للاستراتيجية المستخدمة تأثيراً في تعلم مهارة المناولة الطويلة من فوق الكتف في كرة السلة .أستخدم المنهج التجريبي لتحقيق أهداف البحث، وتمثل مجتمع البحث بطلبة المرحلة الأولى في كلية التربية البدنية وعلوم الرياضة / جامعة ديالى للعام الدراسي (2024–2025)، والبالغ عددهم (512) طالباً وطالبة. وتم اختيار عينة البحث عشوائياً من طلبة الشعبتين(A-D) ، حيث بلغ عدد الطلبة في كل شعبة (45) طالباً. كما تم اختيار (15) طالباً عينةً استطلاعية .اعدَّت وحدات تعليمية للمجموعة التجريبية لمدة ستة أسابيع، وبعد ذلك أُجري الاختبار القبلي لكلا مجموعتي البحث. ثم نُفذت الوحدات التعليمية للمجموعة التجريبية، في حين درست المجموعة الضابطة وفق أسلوب التدريس التقليدي المعتمد على المدرس. وبعد ذلك قام الباحثون بتحليل النتائج إحصائياً، حيث أظهرت نتائج الفروق بين الاختبارين القبلي والبعدي للمجموعتين التجريبية والضابطة وجود فروق معنوية لصالح المجموعة التجريبية.ومن خلال نتائج البحث، استنتج الباحثون أن توظيف استراتيجية جيكسو (Jigsaw) كان له تأثير إيجابي في تعلم مهارة المناولة الطويلة من فوق الكتف بكرة السلة لدى طلبة المرحلة الأولى في كلية التربية البدنية وعلوم الرياضة.

الكلمات المفتاحية :استراتيجية جيكسو(Jigsaw) ؛ المناولة؛ كرة السلة؛ الرياضة العامة.

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1.0 Introduction

Recent years have witnessed tremendous scientific development in the teaching process in colleges of physical education and sports sciences, and a race to find what is new and appropriate to achieve educational goals. This has contributed to and facilitated the emergence of new ideas that seek to move away as far as possible from repetition and imitation in teaching models in colleges, and to work on implementing different and modern methods and strategies that take into account all aspects related to the educational process. The role of each instructor is that he or she is the focus of the educational process, and the model focuses on improving the academic level of students, as it is used to achieve educational goals. We seek to develop sports sciences by employing modern methods, one of which is the Jigsaw strategy, as it is one of the methods that helps students learn effectively and monitor their performance by using their levels of thinking in a gradual manner according to the educational stages (Bizzocchi and Woodbury, 2003). The Jigsaw strategy has been defined as "an educational/learning design that assumes that the learner works to move from one level of thinking to the next as a result of purposeful and organized guidance through discovery, competition, and integration (Sabbah, 2016). It can be said that education leads to the development of the learner's mind and directing it to master the performance of skills in most sports, and basketball is a team game that is enjoyable for all its viewers, and it has skills performed on the court that give beauty and enjoyment to the viewer (Brown et al, 2018). All skills are important, and mastering their performance is considered the cornerstone of the team that performs the skills when possessing the ball, part of which is the skill of long passing over the shoulder, which complements the rest of the skills. Since basketball is one of the sporting events that occupies an important position among other sports, the level of performance development of its skills, teaching methods, and the art of practicing the game requires the optimal use of motivation and incentive methods while learning and mastering its skills in a way that works to achieve the goals set in the vocabulary of teaching and educational curricula (McLAUGHLIN et al, 2007). If the student is not sure of the goal, the overall impact of the goal in training and performance may be low, and clarity of the goal means that . At what level do students master goals (Abed et al, 2019). It is merely an attempt to find a scientific opportunity to advance to the opposing team's basket, protect the ball from the opponent, and transfer the ball from one player to another (Hanham et al, .2023). This occurs when the player reaches the goal. Therefore, the long pass over the shoulder is the transfer of the ball between players with the ball on the court, as it is an effective offensive means of transferring the ball on the court, especially in the case of a quick attack. It is defined as the process of pushing the ball to the ground with both hands and towards the ground, and bouncing it back to the hands of a fellow player. Hence, the importance of conducting an experimental study to determine the extent of the impact of the jigsaw strategy on learning some of the long pass over the shoulder skill. This is one of the studies that have addressed this model in the field of physical education and sports science, with the aim of stimulating students' thinking and helping them acquire, store, and retrieve information, thus developing the educational process and skill performance (Cochon Drouet et al, 2023). The appropriate teaching method is one that creates an atmosphere of supportive human relationships between the students themselves on the one hand and the teaching staff on the other, while simultaneously enjoying conveying ideas to the students." It also encourages creativity and the ability to solve problems, develops students' self-confidence, and stimulates their motivation to learn and think (Abdel-Mordy et al, 2022). The importance of this research lies in the use of the Jigsaw strategy in teaching the long over-the-shoulder

basketball skill to first-year students in the College of Physical Education and Sports Sciences (Harasym et al, 2008).
The research problem arises from the failure to use a student-centered model that makes learning effective, rather than traditional methods. Furthermore, there is a weakness in the performance of the long over-the-shoulder basketball skill among first-year students in the Colleges of Physical Education and Sports Sciences (Hooyman et al, 2014). Therefore, the researchers decided to conduct a study to answer the following question: Is there an effect of the Van Hiele model on learning the long over-the-shoulder basketball skill . To prepare educational units to identify the effect of the Jigsaw strategy

2.0 Research methodology

2.1 Research Hypothesis

There are statistically significant differences between the pre- and post-tests, in favor of the post-test for the sample. My research group on learning the long over-the-shoulder basketball skill.

2.2 Exploratory Experiment

The exploratory experiment is a preliminary experimental study conducted by the researcher before conducting his research. The goal is to select research methods and tools, assess the level of the equipment used, and identify any negative aspects that may arise in the research. It is a practical method for identifying obstacles that the researcher may encounter during the main experiment. It also serves as preliminary preparation for the experiment's requirements in terms of time, cost, support staff, equipment, tools (Davenport and Lauritzen, 2002)
Therefore, the researchers conducted a pilot experiment on a pilot sample of five students from the research community, on Thursday, December 7, 2023, at nine o'clock in the morning, in the basketball court of the College of Physical Education and Sports Sciences. They applied the specific test for the long over-the-shoulder skill, to determine the suitability of the test for the sample, the validity of the tools, and to learn how to apply the tests, their sequence, the method of recording, and the time period for applying each test. 2-4-2- Scientific foundations for the skill test under investigation (validity, reliability, and objectivity)
The researchers extracted apparent validity by presenting the test to a group of arbitrators who approved the test. "One of the components of validity is the test's ability to distinguish between different abilities" (Garland and Sanchez, 2013). After completing the pilot experiment, the researchers processed the data statistically using the simple Pearson correlation coefficient for the long over-the-shoulder basketball pass test. It was found that all skills enjoyed a high degree of reliability, as shown in Table 1.

Table 1. The reliability of the test.

Test	Reliability	Function
long over-the-shoulder basketball pass	0,92	m

2.3 Pre-test of the Research Sample

The pre-test was conducted on the research sample of the experimental and control groups on October 15, 2023, at the College of Physical Education and Sports Sciences stadium. Data was collected and statistically analyzed.

Preparing the Instructional Units: The researchers prepared the instructional units for eight lessons according to the Jigsaw strategy. These included skill-specific exercises and divided the plan into an introduction, the main educational and practical parts, and a conclusion.

2.4 The research community and sample

The objectives the researcher sets for his research and the procedures he uses determine the nature of the community or sample he chooses (Jahn, 2003).

The researchers deliberately defined the research community as first-year students in the College of Physical Education and Sports Sciences (2024-2025), numbering (512) students across all grades, as they study this skill as part of the ministerial curriculum. The researchers then randomly selected the sample, consisting of sections (A-D), with each section consisting of (45) students. (15) students were randomly selected for the pilot study. "The sample refers to a distinct and selected subset of the study community. It is distinct in that it shares the same characteristics as the community, and selected in that it is selected from the study community according to specific procedures and methods .

2.5 Homogeneity and Equivalence Research Sample

The researchers collected homogeneity and equivalence data from the research sample by referring to school records for their ages in months, as well as measuring their height and mass. After analyzing the data, it was confirmed that the sample was homogeneous, as shown in Table (2).

Table 2. The statistical parameters for the variables (height, mass, age)

Details	Mean	Std.Dev	Mediator	Bow
Tall (cm)	156,43	7,76	157	0,220
Mass (kg)	63,57	6,48	62	0,726
Details	Mean	Std.Dev	Mediator	Bow

From Table (2), it is clear that the skewness coefficient values were all within (+1). The researchers also tested the equivalence of the research sample in the long over-the-shoulder hand-to-hand skill test, and it was found that there was statistical equivalence in the data of the two groups, as in (3). It was found that the significance of the differences was not significant. This indicates that the two groups are equivalent.

Table 3. Demonstrates the equivalence of the skill test

Groups	Unit	Mean	Std. Dev	T Value	Error
Long over-the-shoulder handshake	Degree	12,300	1,838	1,067	0,295

2.6 The Test Under Investigation

The test was determined by one of the researchers, who are experienced and specialized in basketball testing and measurement.

- Long Handling Test:
Objective: To perform a long handling test to a teammate.
Needed Equipment: Wall, (5) basketballs.
Procedure: Draw (3) overlapping circles on the smooth wall using chalk and a non-elastic rope, with a nail as the common center for the three circles, as in Figure (1).
1- The diameters of the overlapping circles from the small circle to the large circle are as follows:
Performance characteristic: The student passes the ball into overlapping circles using a long pass. Each student receives ten passes.
Score calculation: The minimum score is 3 and the maximum is 30, based on the numbers in the circles.

3.0 Results and discussion

3.1 Main Experiment

The first lesson was conducted to teach the skill specified in the lesson plan. a sample lesson plan for the experimental group, on December 10, 2023. The last lesson was conducted on February 10, 2024. The teacher used his standard teaching method to teach the control group.

3.2 Post-tests

The researchers conducted a post-test on the handling skill for the two research groups after completing the lessons for the experimental group, which consisted of (8) lessons. This took place on February 11, 2024, at the College of Physical Education and Sports Sciences stadium, taking into account all the conditions, terms, and procedures used in the pre-test.

3.3 Statistical Methods

The researchers used the statistical package (SPSS) to analyze the research data.
Presentation of the Results of the Differences between the Pre- and Post-Tests for the Control Group:

Table . values of the arithmetic means for the control group in the skill test.

skill	Pre-test	Post-test	c- f	f-a	T value	error	function
Long over-the-shoulder handshake	mean	Std dev	mean	Std dev			
	12.950	2.012	17.450	2.416	4 ,500	2,139	9,405

Table (5) shows the arithmetic mean value for the long handling skill over the shoulder for the pre-test (12.950) and a standard deviation of (2.012), and the arithmetic mean value for the post-test (17,450) with a standard deviation of (2,416) and the difference for the arithmetic means (4,500). The value of the differences for the standard deviation was (2,139), and the calculated (t) value was (9,405) and the significance level was (0.05), which indicates the presence of significant differences between the pre- and post-tests in favor of the post-test in the long handling over the shoulder. - Displaying the results of the differences between the pre-test and post-test for the experimental group:

Table 5. values of the arithmetic means for the experimental group in the skill test.

Skill	Pre test	Post test	T value	error	function
	mean	Std.dev			
Long over-the-shoulder	12.300	1.838	9 ,700	3,229	13,430

handshake

Table 5 showed the values of the arithmetic mean for the long handling (12.300) and a standard deviation of (1.838), the arithmetic mean in the post-test (22.000) and a standard deviation of (2.695), and the arithmetic means between the two tests. (9,700) The value of the differences for the standard deviation was (3,229), while the calculated (t) was (13,430).

3.4 Discussion and Analysis

After presenting the results for the research sample in Tables (5, 6, and 7), the researchers concluded that there were differences in all the results of the long over-the-shoulder passing skill test for both groups. The researchers attribute the reasons for the differences and results to the effectiveness of the Jigsaw strategy for learning the long over-the-shoulder basketball passing skill. The Jigsaw strategy plays an effective role in learning the passing skill, "because the steps of the Jigsaw strategy allow the learner to create a meaningful understanding by linking prior knowledge and integrating it with what has been learned. The significant differences achieved by the control group between the pre- and post-tests on the research variable are realistic, as the method, regardless of its type, used by the subject teacher certainly plays a positive role in students' learning and developing their level in the long over-the-shoulder pass. Students learned the skill under study at varying rates. The researcher attributes this to training and practice, as well as feedback, continuous encouragement of the student, and reinforcement of better performance. This positively impacts skill performance, as "learning can only occur through practice, and there can be no learning unless it occurs repeatedly with change, even if this change is simple. Through training and reinforced repetition, there is a gradual improvement in skill performance. Training is the only means of discovering errors and then correcting them.

The researchers attribute the reason for the improved performance of the control group, which learned the skill according to the method used by the teacher, to the fact that the learning process in basketball requires continuous feedback throughout the learning period. Therefore, repeating the skill with the teacher's organized observations and guidance for correct performance. Especially in the early stages of learning, since the students were beginners, meaning they had no prior experience with the skills under study, in the early stages of the learning process, the focus was on direct feedback after each performance. As the research sample's performance level advanced, feedback was reduced, which facilitated a smooth transition between learning stages and the development of the motor program stored in the motor memory for the skill. "Feedback increases performance improvement in the early stages of learning because learning takes the initial image of the skill, develops an appropriate motor program for the response, and implements it. The result is then compared with the established program.

"In conclusion, the student's role is repetition and practice. The teacher provides the students with complete and ready-made ideas and topics, and they are not required to interpret or analyze, but rather to apply and practice to master the skill to be learned. The researchers attribute these results to the effectiveness of the educational units designed according to the Jigsaw strategy used by the experimental group, which helped them outperform the control group. The use of the Jigsaw strategy in its basic stages had a significant and effective positive impact on the development of the learning level of the experimental research sample, providing new opportunities for students to benefit from. Furthermore, the application of the Jigsaw strategy stages had a positive impact on learning by taking into account individual differences in mental abilities among students, facilitating their transition from one level of thinking to another in a manner consistent with their skill and intellectual abilities.

4.0 Conclusions

The results of the arithmetic means for the experimental group in the pre- and post-tests demonstrated that there were differences in favor of the post-tests. The method used by the teacher helped members of the control group learn the handling skill. The Jigsaw strategy was effective in teaching the long over-the-shoulder basketball skill for the experimental group. The Jigsaw strategy lessons had a positive impact on learning the long over-the-shoulder basketball skill, making it superior to the method used in schools. Use the Jigsaw strategy to teach other skills and technical stages of other sporting events, given its novelty. Conduct other similar studies using the Jigsaw strategy on samples of different genders, such as female students.

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