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The effect of problem-solving strategy on learning some basic handball skills

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Abstract

The purpose of this paper is to knowing the effect of the problem-solving strategy on learning some basic handball skills for second-year intermediate students at Hassan bin Thabit School for Boys. The problem of the research lies in that handball is a group sport characterized by its multiple skills. The researcher found that there is a disparity in the level of learning some basic handball skills, as well as the skills are presented in the traditional manner used by the teacher without taking into account the individual differences between the learners. To achieve the goal of the research, the researcher used the experimental method to suit the research problem and research methods on a sample consisting of (40) students distributed into two groups. The experimental group consisted of (20) students and worked with a problem-solving strategy. The control group consisted of (20) students who worked in the traditional method and both groups were subjected to skill tests. It was applied after verifying the scientific foundations for its application, including validity, consistency and objectivity. The problem-solving strategy was applied and the results demonstrated the superiority of the experimental group that learned using the problem-solving strategy in learning some basic handball skills over the control group that learned in the traditional way. In light of the results reached by the researcher, she recommended with a set of recommendations, the most important of which is the necessity of using the educational curriculum using a problem-solving strategy to learn some basic skills in other sports.

Keywords | **Problem-solving strategy**

Introduction:

Education in various countries faces major challenges to confront scientific progress and the explosion of knowledge. Within the framework of successive developments in the field of education in general and the field of methods of teaching physical education in particular, many educators have taken up the advancement of modern strategies in the field of teaching, and it has become necessary to develop new teaching strategies that are able to confront The future is in order to renew knowledge, improve the learning process, and innovate everything new that contributes to shaping the future of students. Therefore, the success of the educational process depends on the correct choice of strategies and methods that achieve learning, and among these modern strategies in the field of teaching is the problem-solving strategy.(Attia) points out that this strategy "works on cooperation between learners to solve the problem, and the role of the teacher is to provide guidance and direction, and he is the organizer of educational experiences. This strategy works to attract the attention of the learners, which is a necessity necessitated by the process of continuous development in life and the many challenges facing the individual that require solutions." Using this strategy makes the teaching process a meaningful task for the learners, which enhances the students' self-confidence, enhances the school's relationship with the environment, and links learning to work or application" (9). (Salama, et al.) define it as (a confusing situation that raises doubt and uncertainty in the learner). (6), points out (Abu Jalala, Subhi Hamdan). (It is a method that takes the solution of problems related to the subject of study and the starting point in teaching the subject by thinking about this

problem and taking the necessary procedures, all the information and results, analyzing and interpreting them, then developing appropriate proposals for them, and the student has acquired scientific knowledge and trained in the method of scientific thinking, which has led to To bring about the required development of her mental and practical skills. (1) . The game of handball is one of the group games, and the basic skills section is an essential factor for learning the other skills in this game, so it is necessary to choose the best strategies that help students learn it faster and teach students to think and be able to solve problems. (Khamis, Muhammad, et al.) (It is one of the effective strategies in developing the creative and innovative abilities of learners, as the learner is busy choosing and discovering the content of the academic subject, and the learner makes decisions in his own work in the academic subject, so he has the opportunity to present the largest possible number of ideas, proposals, and solutions to a specific problem posted by the teacher) (4). Research problem: The problem of the research lies in the experience that the researcher possesses in the field of teaching at Al-Mustansiriya University and her inquiry from some physical education teachers in middle schools. Students at this stage vary in their level of learning the basic skills of handball, in addition to the fact that the skills are presented in the traditional method followed by the teacher without taking into account Individual differences between learners in the level of skill, physical and intellectual performance, in addition to the large number of students in one class, causes boredom and a lack of focus on learning by the students in a scientific manner. This requires a great effort from the teacher to correct the mistakes that students make, so this must be overcome. The problem is addressed in a practical way with strategies that go beyond the weaknesses of the traditional method, so the researcher decided to conduct research that addresses "the effect of using a problem-solving strategy in learning some basic handball skills."

Research objective:

- Identifying the effect of using a problem-solving strategy in learning some basic handball skills
- Identifying the differences in post-tests in learning some basic handball skills.

Research hypotheses:

- There is a statistically significant difference between the results of the pre- and post-test in learning some basic handball skills
- Identifying the differences in the results of the post-test in learning some basic handball skills, in favor of the post-test.

Research fields:

- Human field: Second year middle school students / Hassan bin Thabit for boys
- Time field: (30/10/2022) to (9/1/2023)
- Spatial field: The school yard of Hassan Bin Thabit Intermediate School for Boys

Research methodology and field procedures:

Research Methodology:

The researcher used the experimental method to suit the nature of the research problem, relying on the design of two equal experimental and control groups.

Community and sample research:

The research community was determined by the students of the second intermediate grade of Hassan bin Thabit Middle School for Boys in Baghdad Education / Rusafa First for the academic year 2022-2023, average and their number is (96) students. The sample was chosen randomly and was represented by sections (B, D) out of four sections after the 10 students in the exploratory experiment were excluded, and the absent students were excluded, in addition to the students representing the school team. The final total of the sample became (40) students, divided into two groups: the first group, Division (B), the experimental group, numbering (20) students, either Division (D) It was represented by the control group

Homogeneity of the research sample:

To achieve homogeneity among the individuals in the research sample, the researcher conducted some physical measurements

The physical variables of (age - height - weight) for all members of the research sample before dividing them into two groups to determine if there are differences between the members of the sample, as shown in Table (1).

Table .1 shows the arithmetic mean, standard deviation, and skewness coefficient (age - Length - weight)

Variables	Measuring unit	Mean	Std. Deviations	Skewness
Age	Year	14,71	0,69	0,46
Length	Cm	153,75	0,87	0,87
Weight	Kg	54,80	0,15	0,15

Below the significance level (0.05), the skewness coefficient is between (±1), and this indicates the homogeneity of the sample.

Equivalence of the research sample:

Equivalence was conducted for the two research groups using analysis of variance (t-test), and Table (2) shows this

Table .2 shows the equivalence of the experimental and control groups in the physical skills test under study

No.	Tests	Experimental		Control		T value Calculated	T value Tabular	Type sig
		Mean	Std. Deviations	Mean	Std. Deviations			
1	Dribbling a distance of 30 m in a zigzag direction	35,46	1,78	35,93	1,72	4,53	1,729	Non sig
2	Passing and receiving	16,23	2,40	16,47	2,24	3,06		Non sig
3	Shooting accuracy	3,23	0,98	3,10	0,83	5,65		Non sig

Below the significance level (0.05)

Basic skills in handball: It is part of the curriculum prescribed for the first semester of the second year of middle school for the physical education lesson at school.

Tests used:

The tests were chosen after they were presented to a group of experts specialized in the game of handball, and it was agreed to choose the tests that were applied in the research and tests as follows:

- Continuous dribbling test in a zigzag direction over a distance of (30) m (Odeh, Ahmed Oraibi).(10)
- Passing and receiving test on the wall within (30) seconds (Al-Khayyat and Al-Hayali) (3)
- Shooting accuracy test (Al-Khayyat and Al-Hayali) (220:3)

Exploratory experience:

The researcher conducted the exploratory experiment on Sunday, October 30, 2022, on a sample outside the main research sample, which consisted of (10) students who were randomly selected, and its goal was the following:

- Overcoming the errors and difficulties that appear when performing the main experiment
- The efficiency of the assistant work team
- Identify the time it takes to carry out the tests and exercises in the applied part
- Identify the efficiency of the proposed educational tools
- Identify the extent of the sample members' response and interaction with the test and its suitability for them

Scientific foundations of tests:

Validity of tests:

The researcher conducted self-validity, which represents the square root of the reliability coefficient, as shown in Table (3).

Table .3 shows the self-validity of the skill tests nominated for application

No.	Tests	Validity	Type sig
1	Dribbling a distance of 30 m in a zigzag direction	0,91	Sig
2	Passing and receiving	0,94	Sig
3	Shooting accuracy	0,95	Sig

Test stability:

The test was conducted by applying the test and re-applying the test, where the results of the first exploratory experiment were adopted as the first application of the test, then the test was re-applied a week later on the same sample, at the same time and place, and the correlation coefficient between the two tests was calculated using the Pearson correlation coefficient, as shown in Table (4).

Table .4 shows the stability of the skill tests nominated for application

No.	Tests	Stability	Type sig
1	Dribbling a distance of 30 m in a zigzag direction	0,84	Sig
2	Passing and receiving	0,90	Sig
3	Shooting accuracy	0,92	Sig

Objectivity:

The tests that were used in the research are far from self-evaluation and bias, and are clear and easy to understand by the arbitrators and sample members. Therefore, the researcher considers them highly objective.

Pre-tests:

- The pre-tests were conducted on the experimental and control research groups on Monday, 8/11/2022.
- All practical tests were conducted in the school yard
- Before conducting the tests, the researcher explained and clarified how to apply the tests
- The tests were conducted with the assistance of the assistant work team and under the direct supervision of the researcher.

Implementing the educational curriculum:

The researcher prepared educational units by relying on scientific sources, and in order to ensure the validity of the educational units, they were presented to a group of experts and specialists in the field of teaching methods and handball to state their opinions. In light of the experts' guidance, modifications were made and the units became ready for application.

- The educational units for the experimental group were prepared using a problem-solving strategy
- The problem-solving strategy was used with the experimental group, a strategy that depends on the student's creativity. The teacher raises a question about the skill that is considered the problem, the student must invent new methods to reach the best performance of the skill to be learned, and Appendix (2) shows this.
- The traditional method used by the teacher was used with the control group
- The educational curriculum took a period of eight weeks, with (2) educational units per week.
- The time of one educational unit is (45) minutes
- Implementation of the educational curriculum began on 11/10/2022
- The educational units are divided as follows:
- The preparatory section is (10) minutes long and includes...
- The introduction and general warm-up are (5) minutes long, and the special warm-up is (5) minutes long.
- The main section is 25 minutes long and is divided into two parts.
- The educational activity lasts (10) minutes, during which the skill is explained by the

teacher using a problem-solving strategy and then presented.
- The practical activity lasts (15) minutes. The students, apply the skill either the teacher's role in the evaluation cycle process, noticing the students' mistakes and correcting them.
- The final section lasts (10) minutes, in which the body calms down, the educational unit ends, and the departure shout is given.
- The last educational unit was on 1/5/2023 for vocabulary educational units.

Procedural steps to implement a problem-solving strategy:
- Dividing the students
- Understanding the problem
- Develop a solution plan
- Implementing the solution
- Review the solution and verify its validity
- Implementing the solution.

Post-tests:
The post-tests were conducted after completing the implementation of the educational units on Monday, 9/1/2023, and the same steps were followed that were followed in the pre-test, with the help of the assistant work team and under direct supervision by the researcher, and the statistical bag (spss) was used by the researcher.

Result:

Table .5 shows the significance of the differences between the results of the pre-test and post-test for the experimental group of skill tests (dribbling a distance of 30 meters in a zigzag direction - passing and receiving - shooting accuracy)

Tests	Pre-test		Post-test		T value Calculated	T value Tabular	Type sig	Measuring Unit
	Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation				
Dribbling a distance of 30 m in a zigzag direction	35,46	1,78	30,12	1,56	4,61	1,698	Sig	Second
Passing and receiving	16,23	2,40	24,50	2,73	4,12		Sig	Count
Shooting accuracy	3,23	0,98	6,76	0,88	7,43		Sig	Degree

Below the level of significance (0.05) and the degree of freedom (19)

Table .6 shows the significance of the differences between the results of the pre- and post-tests for the control group for skill tests (dribbling a distance of 30 m in a zigzag direction - passing and receiving - shooting accuracy)

Tests	Pre-test		Post-test		T value Calculated	T value Tabular	Type sig	Measuring Unit
	Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation				
Dribbling a distance of 30 m in a zigzag direction	35,12	1,72	32,20	1,92	5,05	1,698	Sig	Second
Passing and receiving	16,47	2,24	20,71	1,97	4,33		Sig	Count
Shooting accuracy	3,10	0,83	5,60	0,39	8,15		Sig	Degree

Below the level of significance (0.5) and the degree of freedom (19)

Table .7 shows the results of the post-tests for the experimental and control research sample for skill tests (dribbling a distance of 30 meters in a zigzag direction - passing and receiving - shooting accuracy)

Tests	Experimental		Control		T value Calculated	T value Tabular	Type sig	Measuring Unit
	Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation				
Dribbling a distance of 30 m in a zigzag direction	30,12	1,56	32,20	1,92	6,12		Sig	Second
Passing and receiving	24,05	2,73	20,71	1,97	5,54	1,729 ,1	Sig	Count
Shooting accuracy	6,76	0,88	5,60	0,39	9,08		Sig	Degree

Below the significance level (0.05) and degree of freedom (38)

Discussion:

It is clear from Tables (5-6-7) that the experimental group was superior in learning basic handball skills, which were learned using a problem-solving strategy. The researcher attributes the reason for this to the fact that these skills are the foundation of the game and the basic pillar, which is the main factor because physical and tactical preparation are worthless. Without learning these skills, if the student is physically prepared without skill preparation, he cannot exploit his capabilities to control the ball during his movement to achieve victory. The student's success depends on his performance of these skills, as they depend on using the ball, passing it, and throwing it through the hands, and having the ability to implement them under various circumstances. Mastering these skills works to raise the level required for the students. The students gradually learned the skills. In the beginning, they were taught the skill of dribbling, as it requires neuromuscular coordination between the body's organs, in addition to learning the skill of passing, which is one of the easiest ways to move the ball from one place to another on the field. The more they learned the skill. Passing and receiving is difficult to overcome and contributes to moving the ball to the appropriate places to achieve shooting, which is the last step for the team to win in handball. Therefore, the higher the skill performance, the higher the general level of the game. To raise the level of physical performance, the researcher used the problem-solving strategy, which is one of the strategies that works to relieve boredom from The students resulting from using one method in education, and the successful teacher is the one who makes the learner the focus of the educational process and works to develop thinking, reveal the learner's own abilities, and contribute to solving problems. Based on the above, (Attia, Mohsen) explains (it is necessary to keep up with teaching everything that is new). Of the teaching strategies, methods and methods, as it is no longer acceptable to adhere to methods based on memorization and indoctrination, as it is no longer sufficient for the requirements of the educational process and is no longer able to respond to the goals of education in light of the modern vision of education and teaching, and it has become important to be familiar with everything that is new in teaching because the world is witnessing a qualitative leap. And quantitatively in all areas of life, and remaining on the old strategies in teaching will increase the differences between us and the developed countries of the world) (8), and (Zeiton) points out that "the problem-solving strategy is one of the effective strategies in teaching and training, because it helps students find solutions on their own through During research, exploration, questioning, and experimentation, it also helps them analyze and organize their thoughts in unconventional situations, and accustoms them to confronting the problems they face in similar situations with confidence (5). The researcher believes that using this strategy is compatible with the requirements of modern education, as this strategy helped to

attracting the students' attention to the lesson and stimulating their senses and mind, which helped achieve a basic principle of modern educational thought in stimulating students' motivation towards learning. The skills were characterized by a progression from easy to difficult so that they are compatible with the students' level for this stage. This strategy is based on involving other skills such as thinking in the stage of understanding the problem. In addition, analyze it to reach the solution, (Abdel Karim, Afaf) indicate. (It is necessary to design the strategy in procedural steps so that each step has alternatives so that it is flexible when implemented. Each of the steps contains detailed, regular and sequential details to achieve the desired goals. Therefore, when implementing the strategy, the teacher is required to have organized planning, taking into account the nature of the learners and understanding the individual differences between them. Learn about the components of teaching. (7). this strategy differs from the traditional method that relies on explanation and indoctrination on the part of the teacher in presenting the model to the students without their participation. This strategy is one of the strategies that focuses on the intellectual processes to perform a task that requires mental and skill requirements to convey the material to the learner's mind and reach the higher stages of performance. He points out (Al-Hayek and Al-Sutri) ((This educational strategy is important for students during the lesson and not to focus on one aspect over the other, and to link the level of psychological characteristics to the educational and skill level, and to work on modifying ideas and increasing self-confidence to face problems and develop their thinking skills. It also contributes to giving students of different educational levels more Harmony, cooperation, and self-esteem, which are not linked to a specific age, which makes them more effective and able to ask and answer questions (2). (NajlaaAbbas) it was found that there is a strong relationship between sports media and sports culture, and the researchers recommend conducting more research on the role of university media in other fields.(11). (NajlaaAbbas) "Achieving the construction of a positive thinking scale for the skill of receiving serve in volleyball for the students of the second stage in the department of Physical Education and Sports Sciences" (12). One of the most important results reached by the researcher is that: Achieving the construction of a positive thinking scale for the skill of receiving serve in volleyball for the students of the second stage in the department of Physical Education and Sports Sciences, and the ease of applying the positive thinking scale for the skill of receiving the serve in volleyball for the students of the second stage. The Statistical Package for Social Sciences (SPSS, version 26) was used for data analysis. The results showed that the members of the teaching staff in the Faculties of Physical Education and Sports Sciences have a high level of occupational pressure ($p < 0.05$), with an increase of the undesirable level of pressure on relationships and communication with members of the staff teaching and students. In conclusion, faculty members in the Faculties of Physical Education and Sports Sciences have an undesirable level of occupational pressure and a high level of stress when they use e-learning method of teaching. (13).

Conclusions:

- The experimental group that learned using the problem-solving strategy excelled in learning some basic handball skills
- The traditional method achieved learning, but to a lesser extent than the experimental group.

Recommendations:

- Necessity of using problem-solving strategies in teaching other skills in different sports
- Conduct similar research on a sample of female students.
- Training teachers to use this strategy in various sports games.
- Conducting similar research for other academic stages.

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Appendix (1)

Names of the experts and specialists in teaching methods and handball who were presented with handball skill tests

No.	Name	Affiliations	Specialization
1	Prof. Dr. Ismail Abd Zaid	Mustansiriyah University/ College of Basic Education	Teaching methods/football
2	Prof. Dr. Dasra Yassin	Mustansiriyah University/ College of Basic Education	Teaching methods/hand
3	Prof. Dr. Imad Tohme	Mustansiriyah University/College of Basic Education	Teaching methods/basketball
4	Prof. Dr. Mohamed Rahim	Mustansiriyah University/ College of Basic Education	Teaching methods/racquet games
5	Prof. Dr. Mayada Khaled	Al-Mustansiriya University/College of Basic Education	Teaching methods/basketball
6	Assist. Prof. Dr. Firas Ajeel	Mustansiriyah	Teaching methods/swimming

		University/College of Physical Education	
7	Assist. Prof. Dr. qaysar Abdel-Sada	Mustansiriyah University/ Department of Student Activities	Teaching methods/handball
8	Lec.Dr. Oamar Nouri	Mustansiriyah University/College of Basic Education	handball
9	Lec.Dr. Neamat Karim	Mustansiriyah University/Basic Education	handball
10	lec. Louay Abdel Sada	Mustansiriyah University/ College of Basic Education	handball

Appendix (2)

A model educational unit using a problem-solving strategy

Grade: second intermediate

Educational unit: First

Date: 10/11/2011

Number of students: 20 students

Time: 45 minutes.

Educational goal: Learn the skill of dribbling

Educational goal: Emphasizing order, control and respect

Sections of the educational unit	Time	Basic handball skills	Organization	Notes
Preparatory part	10minute 2minute	Taking absences, preparing tools -	× × × ×student Δ teacher	Emphasize correct standing
introduction	3minute	General preparation for all body organs	×××××× × × ×Δ×	
General warm-up	5minute	Special preparation serves the main section, with some exercises given with the ball in order to feel it		
main section Educational section	25minute 10 minute	Asking a group of questions to the students about performing the skill of dribbling, and	×××××××× × × ×Δ×	

		then explaining the skill by the subject teacher using (the problem-solving strategy) and introducing them to this strategy.		
Applied section	15minute	Students apply the skill from a standing position, from a spread position on the field, and from a standing position facing a colleague, using tools that serve the strategy	× ×Δ	Emphasize the parts of the movement and the general form of the skill
Concluding section	10 minute	Small game Say the departure greeting and then leave in a continuous manner	×××××Δ	Emphasize the system

تأثير إستراتيجية حل المشكلات في تعلم بعض المهارات الأساسية بكرة اليد

اسماء عزيز فالح

الجامعة المستنصرية/ قسم النشاطات الطلابية

مستخلص البحث

هدف البحث الحالي إلى معرفة تأثير إستراتيجية حل المشكلات في تعلم بعض المهارات الأساسية بكرة اليد لطلاب الصف الثاني متوسط مدرسة حسان بن ثابت للبنين وتكمن مشكلة البحث في إن كرة اليد من الألعاب الجماعية التي تمتاز بمهاراتها المتعددة ووجدت الباحثة إن هناك تفاوت في مستوى تعلم بعض المهارات الأساسية بكرة اليد، فضلا عن إن المهارات تقدم بالأسلوب التقليدي المتبع من قبل المدرس من دون مراعاة الفروق الفردية بين المتعلمين . تحيقا لهدف البحث استخدمت الباحثة المنهج التجريبي لملائمته مشكلة البحث وطرق البحث على عينة مكونة من (40)طالب موزعين على مجموعتين المجموعة التجريبية بلغت (20)طالب وتعملت بإستراتيجية حل المشكلات أما المجموعة الضابطة تكونت من(20)طالب تعملت بالطريقة التقليدية وأخضعت المجموعتين لاختبارات مهارية تم تطبيقها بعد التأكد من الأسس العلمية لتطبيقها من صدق وثبات وموضوعية وتم تطبيق إستراتيجية حل المشكلات وأثبتت النتائج تفوق المجموعة التجريبية التي تعلمت باستخدام إستراتيجية حل المشكلات في تعلم بعض المهارات الأساسية بكرة اليد على المجموعة الضابطة التي تعلمت بالطريقة التقليدية وفي ضوء النتائج التي توصلت لها الباحثة أوصت بمجموعة من التوصيات من أهمها ضرورة استخدام المنهج التعليمي باستخدام إستراتيجية حل المشكلات في تعلم بعض المهارات الأساسية في العاب رياضية أخرى.

الكلمات المفتاحية | **إستراتيجية حل المشكلات**