**The effect of using the (K.W.L) strategy on developing inferential thinking and performing some basic handball skills for female students, College of Education and Sports Sciences, University of Misan**

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**Abstract**

The importance of research is in the use of modern and effective teaching strategies and methods. Therefore, teachers' ideas tended to find and search for unique teaching methods. The teacher is a guide and assistant to students on the knowledge and how to use educational techniques and strategies that would enable the student from storing knowledge and reusing it in new situations. The present study used the (K.W.L.) strategy in developing inductive thinking and learning some basic handball skills and to gain knowledge from the theoretical and practical side. As well as this strategy has a new aspect. It is an expressive method that supports teachers to achieve the best results. The researchers' experiences determined the research problem that they were teachers in the subject of handball. They noticed that some teachers do not take into consideration the impact of modern strategies in developing thinking and learning basic handball skills, especially in practical application. Many academic scientific fields have used(K.W.L) strategy in the mathematical field and gained also benefit in the practical application. Besides, a new experience of this strategy in the practical mathematical field helps in the development of cognitive achievement for the student's ability in the practical application of basic handball skills. The research objectives, are to know the effect of using a strategy (K.W.L.) in developing inferential thinking among the research sample, as well as knowing the effect of using (K.W.L.) strategy in learning basic handball skills. There were statistically significant differences when using the (K.W.L.) strategy in developing inferential thinking and learning basic handball skills in the research sample. The most prominent conclusions reached by the researchers: firstly the (K.W.L.) strategy has an apparent effect on developing the performance level of the selected basic skills and stimulating the spirit of competition and plays among the students of the research sample. There is a moral correlation between learning some basic skills chosen and between developing inductive thinking among the students of the research sample. The most prominent recommendations are the adoption of this strategy by faculty professors due to the development achieved in the level of performance. Thus, the increase in suspense and excitement, and the preparation of this strategy can apply for the rest of the games for the same school stage and other stages of the study. As well as the possibility of learning and development for students with inferential thinking, teams for universities can be selected from them for various games.

**Definition**

**1-1 Introduction and importance of research**

Teaching constitutes a set of theories and facts that are transformed into skills and experiences through training and applied by making a series of decisions and by finding many methods that help the student to learn, grow or generalize, and draw educational experiences that develop his skills and concepts and enable him to enjoy learning experiences and the activity or subject he studied. The advanced technologies adopted by modern theories and enhanced by advanced technology have become evident in all fields of knowledge. To develop teaching methods effectively, it is necessary to benefit from everything new and useful and apply them in all educational stages. The training of faculty members to use modern teaching methods and qualify them to carry out the duties of teaching according to Holistic Integrative Methods. The use of advanced teaching methods reflects an excitement on the student, through which he can interact and control the educational curricula, and facilitate the educational process consciously and follow the relationship of concepts to each other, adjusting and changing during his interaction with them.

It is imperative to use modern and effective teaching strategies and methods. Therefore, teachers' ideas have tended to find and search for different teaching methods in which the teacher is a guide and assistant to students in knowledge and how to use this method and employ it in practical lessons. These efforts have concluded that any methods and strategies that students need in practical lessons that help students learn skills and develop their thinking. These methods differ according to the experiences that they pass through, their way of thinking about it, or their perception of it. Therefore the process of skill formation results from an impression or perception. Individuals differ according to the different individuals themselves. The school curriculum, in general, is full of many abstract or tangible concepts, especially the physical education and sports science curricula, as its study units are organized around specific skills. These curricula focus on the student's participation in the learning process, and on practicing thinking to perceive relationships and make conclusions. Thus, it is assumed that this systematic organization leads to helping the student to understand the contents of his scientific subject. It becomes the general concepts are the primary goal to be achieved. The educational techniques and strategies enable the student to store knowledge and reuse it in new situations and here lies the importance of research using the (K.W.L.) strategy in developing inferential thinking and learning some basic handball skills. Therefore, knowledge is gained from the theoretical and practical side. As well as this strategy has a new aspect. It is an expressive method that supports teachers to achieve the best results. The researchers' experiences determined the research problem that they were teachers in the subject of handball.

**1-2 Research Problem**

Understanding the methods of teaching is one of the most essential and required basic constituents that must be taken into account by physical education teachers to develop the teaching and learning process and achieve the correct scientific and educational goals. Despite the fact that the efforts are being made in the educational process, education and teaching still face several problems, including the low level of education in some academic levels. Low education is an educational and psychological problem for the student due to its effects, such as feeling frustrated and weakening the motivation to learn. Teaching in the field of physical education and sports science differs from other fields or disciplines because education is closely related to practical application. As the low learning, in this case, represents a failure in achieving the goals because the cognitive achievement alone is considered deficient if it is not accompanied by practical application.

Through the researchers' experience of being teachers in the subject of handball, They noticed that some teachers do not take into account the extent of the influence of modern strategies in developing thinking and learning basic skills in handball especially in practical application. The lack of interaction reflects what he has learned in the theoretical side of information to the actual application on the field. The basic skills in the game need a large cognitive structure that helps him to move correctly according to the many and changing playing situations. The practical application stage is the most critical and difficult stage that should be taken care of. Therefore, the two researchers decided to use the (K.W.L) strategy that was used in many academic scientific fields to introduce it on the mathematical side and benefit from it in the practical application. Also, it is a new experience for this strategy in the practical mathematical side that helps in developing cognitive achievement. The benefit in the student's ability to practice basic handball skills, as well as gain time and effort. It may be an effective strategy that teachers may use to achieve the best results.

**1-3 Research Objectives**

1- Knowing the effect of using the (K.W.L) strategy on developing inferential thinking among female students of the College of Physical Education and Sports Sciences, University of Maysan.

2- Knowing the effect of using the (K.W.L) strategy on learning basic handball skills among female students of the College of Physical Education and Sports Sciences, University of Maysan.

1. **4- The two research hypotheses**

1- There are statistically significant differences when using the (K.W.L) strategy in developing inferential thinking among female students of the College of Physical Education and Sports Sciences, University of Maysan.

2- The presence of statistically significant differences when using the (K.W.L) strategy in learning basic handball skills among female students of the College of Physical Education and Sports Sciences, University of Maysan.

**1-5 Research fields**

1-5-1 The human field: Female students of the third stage of the College of Physical Education and Sports Sciences - University of Maysan for the academic year 2018-2019.

1-5-2 The time domain: the period from 8/2/2018 to 21/8/2020.

1-5-3 Locative domain: The closed hall of the College of Physical Education and Sports Sciences - University of Maysan

**2- Research methodology and field procedures:**

**2-1- Research Methodology:**

Choosing the appropriate approach to the scientific problem is one of the important steps that the research entails. Therefore, the researchers used the experimental method for its suitability to the nature of the research and its objectives, which is one of the adequate means in reaching reliable knowledge[[1]](#endnote-1).

**2-2 Research sample: -**

One of the important things that should be taken care of in order to give more accurate and reliable results is choosing the sample that truly represents the community.

"The research sample should represent the real, honest and original community. When the researcher collects his data, the whole community should be representative sample of this community" [[2]](#endnote-2)

The research community consists of the (28) students of the College of Physical Education and Sports Sciences at Maysan University. It was chosen by the deliberate method. The capabilities were provided in terms of (the field, tools, and equipment). This method represents a "free choice on the basis that it fulfills the purposes of the study carried out by the researcher."

**2-2-1 Equivalence of the sample: -**

The two researchers conducted parity for the control and experimental groups in the level of skill performance, by using the statistical (T) test for two equal samples for the pre-test of handling, patting and correction skills under study, as shown in Table (1)

1. Muhammad Hassan Allawi and Osama Kamel salary; Scientific Research for Sports Education and Sports Psychology: (Cairo, Arab Thought House, 1999) p. 217 [↑](#endnote-ref-1)
2. Thouqan Obaidat (and others); scientific research, its concept, its tools, its methods, 5th Edition: (Amman, Dar Al-Fikr Publishing House, ed. 5.1996), p. 324.

   Table (1) shows the arithmetic mean and standard deviations in the equivalence tests for the control and experimental groups, the calculated and tabular value (t) and their statistical significance.

   |  |  |  |  |  |  |  |  |  |  |  |
   | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
   | tests | Measurement | control group | | group number | experimental group | | group number | Sample value t | Calculated value T \* | Indication tabular |
   | y | O ± | y | O ± |
   | Handling | Number of times | **17.54** | **1.78** | **28** | **20.40** | **1.55** | **28** | **1.31** | **1.67** | Not significant |
   | The plump | Tha | **11.84** | **2.22** | **14.47** | **0.56** | **0.38** | **Not significant** |
   | Correction | points | **10.09** | **1.12** | **13.48** | **1.08** | **1.47** | **not significant** |

   (\*) Below the level of significance (0.05) and the degree of freedom (27)

   It is evident from Table (1) that the calculated value of (t) is smaller than the tabular value of (t) in the equivalence tests, which indicates that there are no significant differences between the control and experimental groups in the skill level between them.

   2-3 devices, tools and aids: -

   2-3-1 Devices and aids: -

   They are all means that help the researcher to collect information and solve the problem to be studied. The following devices and means have been used:

   1- A tape measure.

   2- Electronic stopwatches (3). (Casio type)

   3- (12) hand balls.

   4- Handball yard.

   5- Number of (10) signs.

   6- A handball goal painted on the wall.

   7- Assistance Work Team (\*)

   2-3-2 Research Tools: -

   1- Arab and foreign sources.

   2- The opinions of experts and specialists, see Appendix (1) and (2)

   3- Questionnaire form, see Appendix (3)

   4- Tests and measurements.

   5- Statistical methods.

   **2-4 Tests used in the research: -**

   The selection of tests is one of the important steps in scientific research in order to measure the variables related to the research. The test is a set of exercises given to an individual with the aim of identifying her abilities, aptitudes, or sufficiency”(1). As a result of the researchers' knowledge of most of the available scientific sources related to his research, a number of standardized tests (\*) were selected and presented to a number of experts and specialists (\*\*) to take their opinions on their validity and suitability and choose the best ones to achieve the research objectives as in Table (2)

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   (\*) Dr. Muhammad Majid Muhammad Salih / Tests and Measurement / College of Physical Education and Sports Sciences - University of Maysan.

   Abbas Taha Hussein. Handball / College of Physical Education and Sports Sciences - University of Maysan

   Nadia Mahdi Saleh / Learn Handball / College of Physical Education and Sports Sciences - University of Maysan.

   (1) Muhammad Subhi Hassanein; Measurement and evaluation in physical education: Cairo, Dar Al Fikr Al Arabi, 1995, p. 213

   Table: 2 shows the percentage of consensus among experts and specialists for the candidate skill tests.

   |  |  |  |  |
   | --- | --- | --- | --- |
   | **Classification of basic skills** | **Alfa** | **The objective of the test** | **Percentage of agreement** |
   | Handling | **1** | measuring compatibility and handling speed | **85.71%** |
   | **2** | scrolling and receiving speed measurement (3) meters | **14.29%** |
   | Clapotement | **1** | measure the level of skill and agility of the clapotement (30) meters | **100%** |
   | **2** | Measuring the skill of the clapotement | **0%** |
   | **Scoring** | **1** | **Measuring the accuracy of the correction on the goal from a distance of (6) meters** | **85.71%** |
   | **2** | Measuring accuracy of aiming | **14.29%** |

   The above table indicates that the aforementioned tests were chosen because they obtained the required agreement percentage.

   **2-5 Inferential thinking test**

   The researchers prepared a test for inferential thinking that contains 24 paragraphs. Each paragraph has three alternatives, one is correct and two are false. This method is considered as a common in all inferential thinking tests, because it is the most objective and easy to analyze statistically. To the scientific background in light of the definition of inferential thinking, the researchers seek the help of the opinions of the referees, as well as preparing the test from previous studies that dealt with inferential thinking.

   The test construction performed the following stages:

   1- Validity of the test: A valid test is the test that measures what was prepared to measure, and which achieves what was prepared, not a set.

   • Apparent truthfulness: the inferential thinking test paragraphs were presented to a group of arbitrators, and the paragraphs that obtained an agreement of 80% or more were accepted and amended that did not obtain the agreement.

   • Construction validation: The researchers applied the test on the statistical analysis sample and verified this type of validity.

   **2-6 Exploratory Experience: -**

   The exploratory experience is “a practical training for the researcher in order to identify the negatives and positives that they encounter during the examination in order to avoid them.” (1). To properly assess the implementation of the vocabulary of the tests that lead to obtaining correct , accurate results according to the scientific methods used. Therefore, the two researchers, together with the assistant work cadre, conducted the exploratory experiment on a random sample of the third stage of students to carry out the tests for the basic skills under investigation (6). Students participated in the pilot experiment on 3/20/2019 and they were excluded from the main experiment.

   **2-7 The scientific basis for the tests used: -**

   **2-7-1 Test validation: -**

   The two researchers relied on the validity of the content or the content to extract the validity of the test, which is that “the test measures what it is designed to measure, meaning that the honest test is a test that measures the function that it claims to measure and does not measure anything else in place of it or in addition to it.” (1) Therefore, the tests were presented to a group of experts and specialists in the field of tests, measurement and sports training science / handball specialization. The validity of the tests was proven after the experts agreed that they achieve the purpose for which they were set and their suitability for this age group.

   **2-7-2 Test Stability: -**

   “This name is given to the test if the test is repeatedly used. It gives the same results every time.” (2) To calculate the consistency factor, the test method was chosen and the test was re-applied to a sample consisting of (8) students from outside the research sample on 3/28/2019. The test was repeated after (7) days and on the same sample on 5/3/2019. Under similar conditions to extract the correlation coefficient between the first and second application used the simple correlation coefficient (Pearson) for each test as shown in Table 3.

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   (1) Abdullah Al-Kandari and Muhammad Ahmad; Scientific Research Methods in Physical Education and Islamic Sciences, Edition 1: (Kuwait, Al-Falah Library for Publishing and Distribution, 1999) p.154.

   (2) Sami Melhem; Research Methods in Education and Psychology, Edition 1: (Amman, Dar Al-Seera for Publishing and Distribution, 2000) p. 287.

   Table: 3 shows the correlation coefficient for the selected basic skills tests

   |  |  |  |
   | --- | --- | --- |
   | Tests | Coefficient | Tabular value (\*) |
   | Compatibility measurement and handling speed | **0.84** | **0.55** |
   | Measuring the level of skill of chill and agility (30) meters | **0.94** |
   | Measuring accuracy of correction on the goal from a distance of (6) | **0.92** |

   (\*) Below the level of significance (0.05) and the degree of freedom (7)

   **3-7-2 Objectivity: -**

   It is the non-interference of the researcher's subjectivity, opinions and beliefs in the test results (1). The tests that were used in the research are far from self-evaluation and bias. They are clear and easy to understand by the sample members and rely on clear measurement tools because the results of these tests are recorded in units of time / s and distance. / Cm and number / points. Therefore, the researchers consider the tests used in the research with high objectivity.

   **2-8 Preparation of style exercises (K.W.L)**

   After reviewing many scientific sources and opinions of some experts and specialists in the field of teaching methods, kinetic learning and handball, to benefit from their sound opinions and directives, and to achieve the research objectives, the two researchers prepared exercises for the KWL method with the aim of learning some basic skills of handball for students of the third stage.

   **2-9 field research procedures: -**

   A set of exercises (\*) were used, which were applied in the main part of the lesson. The exercises were distributed among the skills under discussion. (12) exercises were used for each skill graded from easy to difficult in the (WKL) style. Also, the educational units were divided into (4) Educational units for each skill. Thus, the number of teaching units for skills becomes (12) units, leaving one educational unit used to give exercises similar to the playing state.

   The period in which the researcher used the set of exercises was (8) weeks at a rate of two units per week. Thus, the number of educational units became (16) units (\*) divided as follows: -

   (4) Handling units.

   (4) Units for the clapotement.

   (4) Correction Units.

   (1) One unit exercises similar to playing situations.

   Total (13) educational units.

   These exercises were used in the practical part of the lecture, as three skill exercises are given in each educational unit. The student has the right to choose the exercise that suits her abilities. The duration of these exercises is (15) minutes. It is the duration of the practical activity of the main part of the lecture, which is (45) duration. Thus, the time for the exercises applied in the educational method is (240) minutes. The time allocated for each skill in the educational method is (75) minutes as shown in the table 4.

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   Salah El-Din Mahmoud Allam: Educational and psychological measurement and evaluation (its fundamentals and contemporary trends), 1st Edition, Cairo, Arab Thought House, 2000, p. 61.

   Table: 4 shows the sections of the educational unit in a manner (K.W.L), their timing and the percentage of each part

   |  |  |  |  |  |
   | --- | --- | --- | --- | --- |
   | Sections of the educational unit | | **Time within one educational unit** | **Total time for (13) educational units** | **The percentage** |
   | **Preparatory Section** | Introduction | 3 | **39** | **6, 6** |
   | Warm-up | **4** | **52** | **8, 8** |
   | Physical exercise | **8** | **104** | **7, 17** |
   | Main section | Educational activity | **10** | **130** | **6, 22** |
   | Practical activity | **15** | **195** | **3, 33** |
   | The final section | a small game | **3** | **39** | **6, 6** |
   | Calming exercises | **2** | **26** | **4, 4** |
   | **Total** | | **45** | **585** | **100%** |

   After determining the tests, the vocabulary of the K.W.L method, and the teaching plans, the researchers taught the selected research sample according to the exercises developed for them.

   **3-10 Pre-Exams:**

   "The pre-tests are one of the means of evaluation, measurement, diagnosis and guidance in the curricula and programs for all levels and age stages, as they play the role of a clear indicator of progress and success in achieving objective goals (1). The pre-tests of the research sample were conducted for the control and experimental groups on 3,7 and 8. In the hall of the College of Physical Education and Sports Sciences, University of Maysan in 2019, the conditions related to the test have been established in terms of time, place, tools used, method of implementation and assisting work team.

   Muhammad Jassim Al-Yasiri and Marwan Abdul Majeed: Statistical methods in the field of educational research. Amman: Al-Warraq Foundation for Publishing and Distribution, 2001.

   **3-11 Post Tests:**

   The post-tests of the research sample were conducted for the control and experimental groups on 12 and 5/13/2019 after an eight-week period of applying the (KWL) method. Assistant work.

   **2-12 statistical methods:**

   The researchers used the statistical program (SPSS) issue (23)

   **3- Presenting, analyzing and discussing the results**

   3-1 Table: 5 shows the arithmetic mean differences between the pre and post tests and the calculated and tabular value of (t) for the selected basic skill tests

   |  |  |  |  |  |  |  |  |
   | --- | --- | --- | --- | --- | --- | --- | --- |
   | The differen ces | Tabular is significant | Calculate ed value (t) | M2p | cf | The volu me | The unit of meas urem ent | Processors  Statistic |
   | significant | 1.73 | 1.86 | 11.80 | 4.8 | 28 | number | Measurement of Compatibility and handling speed |
   | significant | 1.91 | 13.045 | 4.2 | Sec | Measuring the level of skill of chill and agility (30) meters |
   | significant | 1.89 | 18.57 | 6.4 | points | Measuring accuracy of correction on the goal from a distance of (6) |

   Below the level of significance 0.05 and the degree of freedom (27)

   The statistical data in Table (5) indicate that the calculated value of (t) was greater than the tabular value of (t) in all skills. This means that there are significant differences between the pre and post tests in favor of the post-tests.

   The researchers attribute the moral differences in the level of skill performance to the educational curriculum, which contributed to increasing the excitement and excitement through competition exercises within the curriculum. Ahmed Abdel-Khaleq (1999 ) confirms, “The continuation of performance for longer periods using the method of sports competitions helps to raise the physical level and the skills of the handball game”.

   3-2 Table: 6 shows the arithmetic mean differences between the pre and post tests, the sum of the squared deviations of differences, and the calculated and tabular value of (t) for the selected basic tests and inferential thinking

   |  |  |  |  |  |  |  |  |
   | --- | --- | --- | --- | --- | --- | --- | --- |
   | The differen ces | Tabular is significant | Calculate ed value (t) | M2p | cf | The volu me | The unit of meas urem ent | Processors  Statistic |
   | significant | 1.72 | 1.81 | 679.3 | 3.5 | 28 | number | Measurement of Compatibility and handling speed |
   | significant | 1.97 | 262.4 | 3.2 | Sec | Measuring the level of skill of chill and agility (30) meters |
   | significant | 1.84 | 1117 | 4.6 | points | Measuring accuracy of correction on the goal from a distance of (6) |

   Below the level of significance 0.05 and the degree of freedom (27)

   The statistical data in Table (6) indicate that the calculated value of (t) was greater than the tabular value of (t) in all skills. This means that there are significant differences between the pre and post tests in favor of the post tests for inferential thinking.

   The researchers attribute that the presence of significant differences in the level of skill performance is also due to the effect of the educational curriculum and its correct scientific application, graded from easy to difficult. In addition to the tools used to practice the game according to the level of the female students. Abbas al-Samarrai asserted, "The use of tools in the physical education lesson is an important factor in increasing the aspects of physical activity from the lesson and helping them in developing the motor sense and sense of timing and raising the efficiency of the movement performance of students" (1). Also, the small games are present

   (1) Ahmed Abdel Khaleq; The effect of using physical education lesson time on the level of physical and skill performance in handball. The Arab Research Conference: The Reality of Arab Sports and its Future Proposals. The United Arab Emirates. Emirates University . 1999 p.60.

   (1) Abbas al-Samarrai and Abd al-Karim al-Samarrai; Teaching competencies in the methods of teaching physical education. Basra. Dar al-Hikma . 1991 pp. 50-51.

   In the form of exercises within the educational curriculum, it has a great impact on the learning process because it is interesting and far from boredom and monotony in the typical exercises. This was confirmed by (Hana Abdel-Karim), quoting Muhammad Jamil Abdel-Qader, "The use of small games in training is an important factor in raising the technical, physical and psychological level of the player." (1)

   Through the presentation of the results and their discussions, it emerged that the educational curriculum affected the level of performance of the selected basic skills. This is through the significant differences that appeared between the pre and post tests in inferential thinking.

   **4- Conclusions and recommendations**

   **1.4 Conclusions**

   In light of these study results, the two researchers reached the most important conclusions:

   1- That (K.W.L) strategy has a clear effect on developing the level of performance of the selected basic skills and stimulating the spirit of competition and play among the students of the research sample.

   2- There is a significant correlation between learning some basic selected skills and developing inferential thinking among the students of the research sample.

   3- The researchers noted that repeated exercises, assistant tools, small game exercises and competition exercises had a great effect on developing the spirit of excitement and suspense and increasing the tendency towards learning the basic skills chosen for the research sample.

   **4- 2 Recommendations**

   1- The adoption of this strategy is by faculty professors, due to the improvement in the level of performance and the increase in suspense and excitement.

   2- Preparing this strategy for the rest of the games for the same school stage and for other school stages.

   3- Due to the possibility of learning and development of the inferential thinking students, teams can be chosen for universities from them for different games.

   4-Studying the relationship between inferential thinking and learning skills for other games and for different academic stages for male and female students.

   Hanaa Abdel Karim; The effect of a proposed curriculum for the physical education lesson on developing some basic handball skills, MA Thesis. Teachers College - Diyala University, 2002, p. 58.

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   Abbas al-Samarrai and Abdul-Karim al-Samarrai; Teaching competencies in the methods of teaching physical education. Basra. Dar al-Hikma . 1991

   Abdullah Al-Kandari and Muhammad Ahmad; Scientific Research Methods in Physical Education and Islamic Sciences, Edition 1: Kuwait, Al-Falah Library for Publishing and Distribution, 1999.

   Muhammad Hassan Allawi and Osama Kamel Ratib; Scientific Research for Sports Education and Sports Psychology: Cairo, Arab Thought House, 1999 .

   Muhammad Jassim Al-Yasiri and Marwan Abdul Majeed: Statistical methods in the field of educational research. Amman: Al-Warraq Foundation for Publishing and Distribution, 2001

   Mohamed Subhi Hassanein; Measurement and Evaluation in Physical Education: Cairo, Arab Thought House, 1995.

   Hana Abdul Karim The effect of a proposed curriculum for the physical education lesson on developing some basic handball skills, MA Thesis. Teachers College - University of Diyala. 2002. [↑](#endnote-ref-2)