THE IMPACT OF INSTRUCTIONAL SCAFFOLDING ON LEARNING AND COGNITIVE ACHIEVEMENT IN HANDBALL AND RETAINING IT

Prof. Motasim Mahmoud Shatnawi1, Prof. Ali Fo’ad Faiq2, Dr. Muhammad Saeed Al-Saeedin3, Dr. Muhammad Abu Ahmad4

1Mutah University/ Jordan / Albasha1969@yahoo.com
2Al-Mostanseria University / the faculty of basic education/ department of physical education and sports sciences / Iraq
3The Ministry of Education
4alnasrah

ABSTRACT

This study aimed at identifying the impact of a educational program on learning and cognitive achievement in handball and retaining it as well as preparing an educational approach using the strategy of instructional scaffolding which seeks learning and cognitive achievement in handball as well as retaining it. The study used the experimental approach. The study sample was chosen randomly and consisted of (94) students in the first stage in the department of physical education and sports sciencesin the faculty of basic education at Al-Mostanseria University. (SPSS) was used for analyzing the results. The results revealed that generative education has a positive effect on learning performance and cognitive achievement in the course of handball. The researcher recommended the necessity of urging the faculty members to use these new strategies in the educational process.

I. INTRODUCTION AND THE RESEARCH IMPORTANCE:

Learning and developing the basic skills of the required games are basic objectives of the physical education lesson in the kinetic domain. In order to achieve this objective, the best methods should be used accompanied by sufficient knowledge about the characteristics and dispositions of learners in order to achieve the best results.

Handball is one of sports games that are widely practiced; it has a good position since it is an interesting game that connects defensive and offensive skills, contact and interaction of audience with all the performed movements that are learnedand highly-mastered by players during matches. Training students in this age category does not differ from any other game, which is done by preparing the new scientific methods to develop the aspects that should be improved toachieve the best results.

Each educational method has its own objectives, characteristics, implications and applications that are compatible with the required effectiveness and skill that should be achieved. The educational method should correspond with the academic and age category, take into account the individual differences between learners as well as the educational environment, its capabilities and needs, so that it would match with the objective that should be achieved.

In the light of the pre-mentioned data, the author suggested using instructional scaffoldings that are considered as educational methods that take into consideration the levels of students, where the movement is performed based on the student's level and all the students are involved in performing tasks at the same time according to the level of each individual student. Therefore, the effect of teaching by using the strategy of instructional scaffolding represents a scientific attempt to show the utility in the level of skilled performance among the students of the middle stage.

The study importance lies in its attempt to make advantage of the strategy of instructional scaffolding as an educational strategy in the domain of physical education, which takes into account the individual differences in learning some basic skills in handball among the students of the middle stage.
1. The study problem:
The effective and influential teaching is more difficult when there are more educational problems in using teaching methods as a result of the scientific development and the increasing number of students. However, when students come to school with high desire to work, play and learn, the good information introduced by teachers based on their previous experiences affects them, confirms their efforts and pushes them towards learning. This case depends on the good chance made by teachers concerning the teaching strategies that organize students' learning to reach the targeted objectives, due to the role of such strategies in the educational situation.

Based on the field practice and experience of the author as well as his pursuit for teaching handball in the educational units, he noticed that most learners find it difficult to learn the basic skills and apply them. The author attributed that to the strategy used in teaching and suggested that there are appropriate methods that can be used to enhance learning and mastering motor skills among learners, where such methods satisfies the psychological and physical needs and dispositions of learners and pushes them towards acquiring knowledge and achieving a number of objectives.

Therefore, the author hopes that the research would contribute to solving learners' problems by introducing some scientific solutions about using methods that have the potential of achieving a better learning at early stages. The author also highlighted the possibility of applying a new teaching strategy based on instructional scaffolding, which aims to learning and developing skills as well as saving time and effort.

1.2 The study objectives:
1. Developing an educational approach based on the strategy of instructional scaffolding in order to promote learning and cognitive achievement in the subject of handball and retaining it.
2. Identifying the impact of the educational program on learning and cognitive achievement in the subject of handball and retaining it.

1.3 The study hypotheses:
3. In the light of the study objectives, the author set the following hypotheses:
4. There are statistically significant differences between the pre and post tests for the control and experimental groups in learning and cognitive achievement in the subject of handball and retaining it.
5. There are statistically significant differences between the post tests for the control and experimental groups in learning and cognitive achievement in the subject of handball and retaining it.

1.5 The study domains:
1.5.1 The human domain:
A sample of the students of the first stage /the department of physical education and sports sciences /the faculty of basic education /Al-Mostanseria University.

1.5.2 The temporal domain:

1.5.3 The spatial domain:
The internal hall of the faculty of basic education /Al-Mostanseria University.

II. THE STUDY METHODOLOGY AND FIELD PROCEDURES:
2.1 The study methodology:
The researcher used the experimental approach since it is compatible to the study nature and it is an approach for reaching a trusted knowledge. The researcher used both control and experimental groups.

2.2 The study population:
The study population consisted of all the students of the first stage in the department of physical education and sports sciences- the faculty of basic education /Al-Mostanseria University during the academic year (2020-2021),
with a total of (94) students, where two students were excluded; one of them practiced the game previously and the other repeated his class, and (4) students on which the pilot study was conducted.

2.3 The study sample: the study sample was chosen randomly from the study population and consisted of (28) students, who were divided into two identical groups, with (14) students in each group; accordingly, the percentage of the sample is (30.43), which is appropriate to represent the study population.

Table (1) The distribution of the study sample

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of students</th>
<th>Teaching strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Control</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>Experimental</td>
<td>14 Learning by explanation method</td>
</tr>
<tr>
<td>3</td>
<td>Total</td>
<td>28</td>
</tr>
</tbody>
</table>

2.3.1 the homogeneity of the sample:

In order to verify the homogeneity of the sample, the researcher used skewness coefficient for the variables of age, height, and weight, as shown in table (2).

Table (2) Homogeneity in the study variables for the control and experimental groups

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>Mean</th>
<th>SD</th>
<th>Skewness coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (year)</td>
<td>18.45</td>
<td>2.46</td>
<td>18.4</td>
<td>-0.47</td>
<td></td>
</tr>
<tr>
<td>Height (cm)</td>
<td>167.82</td>
<td>6.73</td>
<td>167.5</td>
<td>0.19</td>
<td></td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>65.76</td>
<td>3.24</td>
<td>64.48</td>
<td>-0.14</td>
<td></td>
</tr>
</tbody>
</table>

2.3.2 The equivalence of the study groups:

Before starting with the educational approach, the researcher verified the equivalence of the study groups regarding the targeted variables.

Table (3) The equivalence of the sample in the pre tests for the control and experimental groups

<table>
<thead>
<tr>
<th>Tests</th>
<th>Measurement unit</th>
<th>Pre-test (control)</th>
<th>Pre-test (experimental)</th>
<th>t-value</th>
<th>Sig. level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean SD</td>
<td>Mean SD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dribbling</td>
<td>m/s</td>
<td>8.67 0.706</td>
<td>9.14 0.84</td>
<td>1.05</td>
<td>not significant</td>
</tr>
<tr>
<td>Receiving accuracy</td>
<td>Frequency/s</td>
<td>6.13 0.99</td>
<td>5.37 1.19</td>
<td>0.87</td>
<td>not significant</td>
</tr>
<tr>
<td>Passing accuracy</td>
<td>Frequency/s</td>
<td>2.25 0.70</td>
<td>2.25 0.88</td>
<td>0.98</td>
<td>not significant</td>
</tr>
<tr>
<td>Scoring accuracy</td>
<td>Score</td>
<td>2.25 0.70</td>
<td>2.75 0.46</td>
<td>0.93</td>
<td>not significant</td>
</tr>
<tr>
<td>Cognitive achievement</td>
<td>Degree</td>
<td>8.45 1.03</td>
<td>8.37 0.96</td>
<td>0.86</td>
<td>not significant</td>
</tr>
</tbody>
</table>

*not significant at the level (0.05), since the error level was more than (0.05).

2.4 the used methods and instruments:

2.4.1 the research methods: the researcher used the following research methods:

- Arabic and foreign references.
- A questionnaire for data collection
- A questionnaire for data insertion

3.4.2 The used instruments and materials:
- standard hand balls.
- handball court.
- signs with different heights.
- a colored tape for lining and determining tests areas.
- a 30-meter length tape for measuring length (leather).
- two timing watches (Casio), Japanese made.
- a whistle
- laptops (1)
- electronic scale (Sanyo), Japanese made, to measure weight in (Kg).

2.5 Choosing tests:
The first test: receiving speed on a wall for a distance of three meters.
The second test: dribbling a ball in a curved way for a distance of (15) meters.
The third test: Scoring from the jumping position on two targets (60×60) centimeters for a distance of (9) meters.
The fourth test: passing and receiving from a high level, within (30) seconds. The test aims to test the speed and accuracy of passing and receiving from a high level from a distance of (3) meters.

2.5.1 The test of cognitive achievement:
The research developed a multiple choice attainment test that consisted of (30) items according to test map. Table (3) shows the results.

<table>
<thead>
<tr>
<th>Content</th>
<th>Number of pages</th>
<th>Percentage of content importance</th>
<th>Knowledge</th>
<th>Understanding</th>
<th>application</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical side</td>
<td>12</td>
<td>56%</td>
<td>8</td>
<td>5</td>
<td>4</td>
<td>17</td>
</tr>
<tr>
<td>Law</td>
<td>4</td>
<td>44%</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>100%</td>
<td>13</td>
<td>10</td>
<td>7</td>
<td>30</td>
</tr>
</tbody>
</table>

The test aims to:
1. identifying the degree to which the students (study sample) understand the information related to the technical stages and refereeing domain as well as rules of handball.
2. preparing the guidelines of the test: these guidelines were prepared based on the scientific references relating to handball. The researcher determined the scientific material of the test within two
main axes: technical side and game law. The test material was introduced to (3) faculty members in the department of physical education, specialized in teaching methods and tests in order to give their opinions concerning the targeted cognitive objectives that should be achieved and measured and suggest the items that should be added or deleted.

3. Determining and paraphrasing items. The researcher investigated the types of vocabulary, the terms of writing them and the steps of constructing them according to the standards mentioned by literature and previous studies. Accordingly, the researcher cited the test questions and included them in a questionnaire that consisted of (60) items. The items were introduced to the three pre-mentioned specialists who agreed upon (30) items.

4. Determining the type of questions: Multiple choice questions were selected, with three choices to each item. The researcher considered that the test should match the student's level, should encompass the determined axes and should not be confusing.

5. Developing the primary version of the test: the primary version of the test consisted of (30) items, which should be various and include good amount of data. The test items were distributed to the main dimensions of the study.

6. The test regulations: test regulations are important in applying the test, where students can understand the content and give the right response; it is necessary to write the desired data on the answer sheet.

7. The validity of the primary version of the test: the primary version of the test was introduced to (3) arbitrators from the faculty members, specialized in tests and teaching methods to verify its validity. Also, personal interviews were performed with the targeted arbitrators to make sure that the test items, actually, measure what they are designed to measure; therefore, the final version of the test consisted of (30) items. Table (4) shows the results.

<table>
<thead>
<tr>
<th>Main dimensions</th>
<th>Number of items</th>
<th>Order of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Technical side</td>
<td>25</td>
<td>1-25</td>
</tr>
<tr>
<td>2. Game law</td>
<td>5</td>
<td>26-30</td>
</tr>
</tbody>
</table>

1. Preparing the keys for test scoring:

2. Analyzing the test items: the same test was applied to a sample selected from the study population with a total of (16) students in order to determine the difficulty of items, identify their suitability and calculate ease and difficulty coefficients. The following equation was used to calculate the coefficient of ease:

\[
\text{difficulty estimation} = \frac{\text{the number of students who answered correctly in all items}}{\text{the total number of students}}
\]

the relationship between ease and difficulty is an inverse relationship, which means that their total is equal to one: coefficient of ease = 1 - coefficient of difficulty, coefficient of difficulty = 1 - coefficient of ease. Accordingly, coefficient of ease was calculated to the test item and was equal to (0.50), and the validity coefficient which was also equal to (0.50).

test time:
in order to determine the required time for the test, the researcher used the following equation:

\[
\text{Time} = \frac{\text{the time spent by the first student} - \text{the time spent by the last student}}{2}
\]

Therefore, we were able to determine the time of cognitive test, which is (20) minutes.

Calculating the item difficulty: After scoring the responses, the coefficient of difficulty was calculated, and was between \(0.20\)–\(0.80\) for all the items. Therefore, the scale items are appropriate; i.e. the test items aren't that easy or that difficult.

2.6 The discriminative power of the item:
The concept of the discriminative power of the item refers to the ability to distinguish between the responses of two types of students, where one group has a high achievement level while the other has a low achievement level, and all the test items aren't less than \(0.20\). This value was agreed upon by those working in the domain of evaluation and measurement, where Brown suggested that the discriminative power is good when it is equal \((0.20)\) or more.

\[
\text{discrimination coefficient} = \frac{\text{the students with correct answers (lowest 27%) - the students with correct answers (highest 27%)}}{\text{the total number of students}}
\]

2.6.1 The effectiveness of alternatives:
Judging the validity of alternatives is achieved by comparing the number of respondents to each item, from both upper and lower categories. Based on the responses of the study sample individuals, the effectiveness of wrong alternatives for optional items were achieved, with a total of \((23)\) items; which means that the number of individuals who were attracted from the lower category is higher than the individuals who were attracted from the upper category. Accordingly, all the alternatives were considered as effective and valid.

2.6.2 The scientific bases for cognitive test:
First, the test reliability:

Half split method was used. Pearson correlation coefficient was calculated, with a value of \((0.81)\), the it was modified by Spearman coefficient and gained a value of \((0.88)\), where it considered as reliable since correlation coefficient ranges between \((0.70-0.90)\).

Second, test validity:

The researcher used the coefficient of intrinsic validity for all the tests by calculating the square root of the correlation coefficient.

\[
\text{Intrinsic validity coefficient} = \sqrt{\text{correlation coefficient}}
\]

2.7.1 the reliability of tests:
In order to calculate the test reliability, Guttman Formula for half split was used and applied to a pilot sample, outside the study sample, that consisted of \((4)\) students. Correlation coefficient was calculated to be \((0.88)\).

2.7.2: the validity of tests: The researcher used the coefficient of intrinsic validity for all the tests by calculating the square root of the correlation coefficient.

\[
\text{Intrinsic validity coefficient} = \sqrt{\text{correlation coefficient}}
\]

the pilot study:
the pilot study was conducted on (7/3/2016), and aimed at identifying the following:

- The organization of the test series in order to facilitate transmitting from one test to another.

- The defining unit:
  - Within the objective plan if the research, the defining unit was applied on Monday (14/2/2020). The research group was selected from the study population that consisted of three teaching classrooms. Cautions were taken to prevent the transfer of cognitive learning that affects the results of the experiment; the test was applied to a specific sample.
  - Based on the unit, the researcher:
    - Identified the four skills relating to the test.
    - Giving an idea about the nature of performing the pre-tests for the targeted skills.
    - Giving more freedom by practicing the performance of skills after the complete preparation of the students.
    - At the end of the unit, there was an assertion about the necessity of determining the time of tests, commitment to attendance and cooperation with the arbitration committee.

pre-tests:
The pre-tests were applied on Monday (21/3/2020) after performing a first educational unit that included an explanation for the targeted skills by making use of an ideal human model in introducing these skills. After that, the study sample performed the pre-tests related to technical performance and cognitive achievement.

2.10the items of educational approach:
The research developed a specified educational approach for the individuals of the groups about learning handball skills. The implementation of the program started on (23/3/2020) over (8) weeks and consisted of (16) educational units, with two units in each week and (75) minutes for each educational unit; (150) minutes for the two units that are applied weekly.

Certain educational principles and bases were taken into account at the time of developing the educational approach, these are:

1. Determining the objectives of the educational unit.
2. The educational unit should one or two educational objectives at most.
3. The exercises of the educational unit should achieve the objectives of that unit.
4. The training order should support the achievement of objectives.
5. Determining the specific time period for each exercise.
6. The curriculum's appropriateness to the characteristics of the age category.
7. Considering the students' safety and health.
9. Applying the skills that were taught in a previous unit which teaching the following units in order to remember them and link them with the other skills.
10. Instructing those in charge of the educational process and guiding them towards the right way.

11. Using the ball during the stages of the educational unit (the preparatory part, the main part, the final part).

Here is the temporal distribution of the proposed curriculum:

- The number of weeks (8) weeks.
- The number of educational units per week is two units; \((2\times8=16)\) units.
- The time period for each unit (75) minutes.
- The total time of educational units \((75\times16=12000)\) minutes.
- Each educational unit includes:
  - The preparatory part (20) minutes, including general preparation and physical exercises.
  - The main part (50) minutes, including (15) minutes for the educational part to explain the skill and introduce the model, (30) minutes for the applied part and (5) minutes for assessment tests.
  - The final part: (5) minutes, including a small game as well as relaxation exercises.

The method of teaching the educational unit:

1. Developing an educational plan based on methods and activities that are compatible to the three levels of the students; excellent, middle, low, where the learning outcomes will be clear and expected, and evaluation strategies will be appropriate. The educational plan should take into account the following:
   a. Various objectives, where some have low level, such as knowledge and understanding, while others need higher skills, such as analysis and evaluation for the students with excellent levels.
   b. Diversifying the educational strategies according to the interests of students, where the strategy of direct education is sometimes used, while other advanced strategies, such as brainstorming are used in other times. Each category is given certain tasks that match their level.
   c. Diversifying the expected outcomes, in that achievement is accepted from each category given the abilities of its individuals.

1. Determining the suitable teaching strategy for each one of the three categories and assigning each category a certain activity that is compatible with the dispositions of its individuals; some students interact more during the educational units that are based on brainstorming.

2. Diversifying tasks and activities according to the basic knowledge of each student, in a manner that satisfies their needs.

3. Holding a diagnostic test through the educational units to determine the weaknesses and deal with them.

2.11 Post tests:
The post tests were performed for the control and experimental groups in the same conditions of the pre-tests concerning the variables under study. The tests were held on Wednesday (11/5/2016).

2.12 Retention tests:
The research performed retention tests after completing the educational curriculum, (11) days after holding the post test on Sunday (22/5/2020). The researcher did his efforts to ensure creating similar conditions to those existed during post tests, in terms of time, place, instruments and application method to identify the level of real learning of the targeted skills. The researcher used the absolute retention, which means holding the test after a certain period of time from holding the post test.
2.13 The statistical methods:

(SPSS) was used in order to calculate the percentages, means, median, skewness coefficient, and (T) law for symmetric and asymmetric samples.

III. DISPLAYING, ANALYZING AND DISCUSSING THE RESULTS:

3.1 Displaying and analyzing the results:

Table (5) shows the means, standard deviations, t-value and their indicators between the pre and post measurement for the study variables of the control group.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Measurement unit</th>
<th>Pre-test</th>
<th>Pre-test</th>
<th>f-value</th>
<th>DF</th>
<th>t-value</th>
<th>Sig. level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dribbling m/s</td>
<td></td>
<td>8.51</td>
<td>0.89</td>
<td>9.24</td>
<td>0.95</td>
<td>0.72</td>
<td>0.02</td>
</tr>
<tr>
<td>Receiving accuracy</td>
<td>Frequency/s</td>
<td>6.47</td>
<td>0.78</td>
<td>7.23</td>
<td>0.58</td>
<td>0.70</td>
<td>0.02</td>
</tr>
<tr>
<td>Passing accuracy</td>
<td>Frequency/s</td>
<td>2.30</td>
<td>0.79</td>
<td>3.22</td>
<td>0.95</td>
<td>0.90</td>
<td>0.01</td>
</tr>
<tr>
<td>Scoring accuracy</td>
<td>Score</td>
<td>2.35</td>
<td>0.83</td>
<td>2.91</td>
<td>0.79</td>
<td>0.50</td>
<td>0.01</td>
</tr>
<tr>
<td>Cognitive achievement</td>
<td>Degree</td>
<td>8.51</td>
<td>0.93</td>
<td>12.45</td>
<td>3.94</td>
<td>0.40</td>
<td>0.01</td>
</tr>
</tbody>
</table>

*statistically significant at (0.05) and a degree of freedom (13)

Table (6) shows the means, standard deviations, t-values and their indicators between the pre and post measurements for the variables of the experimental group (Instructional scaffolding strategy).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Measurement unit</th>
<th>Pre-test</th>
<th>Pre-test</th>
<th>f-value</th>
<th>DF</th>
<th>t-value</th>
<th>Sig. level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dribbling m/s</td>
<td></td>
<td>8.41</td>
<td>0.70</td>
<td>10.72</td>
<td>0.57</td>
<td>2.31</td>
<td>0.65</td>
</tr>
<tr>
<td>Receiving accuracy</td>
<td>Frequency/s</td>
<td>6.75</td>
<td>0.78</td>
<td>8.57</td>
<td>0.83</td>
<td>1.81</td>
<td>0.49</td>
</tr>
<tr>
<td>Passing accuracy</td>
<td>Frequency/s</td>
<td>2.14</td>
<td>0.95</td>
<td>2.84</td>
<td>0.79</td>
<td>1.70</td>
<td>0.41</td>
</tr>
<tr>
<td>Scoring accuracy</td>
<td>Score</td>
<td>2.28</td>
<td>0.83</td>
<td>3.64</td>
<td>0.89</td>
<td>1.35</td>
<td>0.61</td>
</tr>
</tbody>
</table>
Cognitive achievement | Degree
---|---
| 8.3 | 0.92 | 14.71 | 0.88 | 6.41 | 0.79 | 21.13 | 0.001

*statistically significant at (0.05) and a degree of freedom (13)

After the researcher performed the post tests for the two groups, he processed the data statistically as shown in table (7).

Table (7)
The equivalence of the sample in the post tests for the control and experimental groups

<table>
<thead>
<tr>
<th>Tests</th>
<th>Measurement unit</th>
<th>Pre-test (control)</th>
<th>Pre-test (experimental)</th>
<th>t-value</th>
<th>Sig. level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td></td>
</tr>
<tr>
<td>Dribbling</td>
<td>m/s</td>
<td>9.24</td>
<td>0.95</td>
<td>10.72</td>
<td>0.57</td>
</tr>
<tr>
<td>Receiving accuracy</td>
<td>Frequency/ s</td>
<td>7.23</td>
<td>0.58</td>
<td>8.57</td>
<td>0.83</td>
</tr>
<tr>
<td>Passing accuracy</td>
<td>Frequency/ s</td>
<td>3.22</td>
<td>0.95</td>
<td>2.84</td>
<td>0.79</td>
</tr>
<tr>
<td>Scoring accuracy</td>
<td>Score</td>
<td>2.91</td>
<td>0.79</td>
<td>3.64</td>
<td>0.89</td>
</tr>
<tr>
<td>Cognitive achievement</td>
<td>Degree</td>
<td>12.45</td>
<td>3.94</td>
<td>14.71</td>
<td>0.88</td>
</tr>
</tbody>
</table>

*statistically significant at (0.05) and a degree of freedom (24)

3.2 discussing the study results:

After displaying and analyzing the results of the pre and post tests, the results revealed that there are significant differences in all the tests in favor of the posttests. The researcher attributed that to the impact of using the strategy of instructional scaffolding, which attracted the attention of students and increased their focus, since it is a new method that was not used previously which depends on the positive interaction during the lesson instead of the negative situation, where the teacher depends on increasing the students' thinking abilities by preparing the suitable educational environment. Furthermore, this strategy is based on the principle of self-learning by making the student as the basic focus of the educational process. This finding agrees with (Mariam Al-Ahmadi, 2011) which revealed that using the strategy of instructional scaffolding facilities the students' understanding for the facts and concepts mentioned in the textbooks, where this strategy develops thinking skills among students concerning meta-cognitive thinking skills.

Table (7) showed that there are statistically significant differences between the post tests for the control and experimental groups in favor of the experimental group in all the tests. The researcher attributed that to the impact of instructional scaffolding strategy which has an ultimate goal of enhancing self-learning, in that the responsibility of doing tasks is transmitted from the most experienced (teacher or peers) to the learner himself. In this vein, the learner becomes independent instead of being dependent upon the instructions given by others. This finding agrees with (Bartton, 2009), which revealed that the strategy represents:

1. An educational situation that focuses on acquiring skills and considers transmitting from a dependent learner to an independent learner.

2. An educational situation that focuses on performing the tasks acquired in new situations.

Before introducing the Instructional scaffolding, the task level should be estimated and the amount of assistance should be titrated by the teacher according to the skill level reached by the learner.

3.3 displaying the results of retention test and the post test for the two groups, their analysis and discussion.

Table (8)
The significant differences between the post tests for the control and experimental groups

<table>
<thead>
<tr>
<th>Tests</th>
<th>Measurement unit</th>
<th>Group</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>Sig. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dribbling</td>
<td>m/s</td>
<td>Experimental</td>
<td>10.06</td>
<td>0.98</td>
<td>8.47</td>
<td>significant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Control</td>
<td>8.98</td>
<td>1.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receiving accuracy</td>
<td>Frequency/ s</td>
<td>Experimental</td>
<td>8.2</td>
<td>1.05</td>
<td>10.3</td>
<td>significant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Control</td>
<td>7.01</td>
<td>1.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passing accuracy</td>
<td>Frequency/ s</td>
<td>Experimental</td>
<td>2.7</td>
<td>0.96</td>
<td>6.72</td>
<td>significant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Control</td>
<td>3.1</td>
<td>1.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scoring accuracy</td>
<td>Score</td>
<td>Experimental</td>
<td>3.14</td>
<td>0.88</td>
<td>13.6</td>
<td>significant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Control</td>
<td>2.3</td>
<td>1.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive achievement</td>
<td>Degree</td>
<td>Experimental</td>
<td>14.02</td>
<td>1.3</td>
<td>17.04</td>
<td>significant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Control</td>
<td>11.75</td>
<td>2.30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*statistically significant at (0.05) and a degree of freedom (24)

Table (8) shows the results of the two groups in the retention tests for the study variables. The results revealed that there are significant differences between the values of the tests results; therefore, retention is a process of relative continuity for the effects of previous learning, where the skill is stored in the brain and retention process is measured in terms of its quality or quantity, such as writing and distinguishing between previous events and things. The researcher attributed the superiority of the students who learned by the strategy of instructional scaffolding to the nature of the strategy which increases the learner's ability to develop his thinking skills. This finding agrees with (March), which suggested that the strategy of instructional scaffolding helps learners to implement the targeted educational skills and performing their roles within the educational system which, in turn, ensures the positive interaction in the educational environment and achieves the targeted objectives with the highest grades.

IV. CONCLUSIONS AND RECOMMENDATIONS:

4.1 conclusions:

1. the strategy of instructional scaffolding has a positive effect on learning performance and cognitive achievement in the subject of handball.
2. there are significant differences between the two groups in learning performance and cognitive achievement in the subject of handball.
3. the strategy of instructional scaffolding is better in learning performance and cognitive achievement in the subject of handball.
4. Using the strategy of instructional scaffolding contributed to reducing the exerted effort in the process of correcting errors and providing feedback about the type of error to learners.
5. Promotes self-confidence among students due to the experiences provided by the strategy of instructional scaffolding by organizing the educational units.

4.2 recommendations:

1. conducting further experimental studies to test the effectiveness of Instructional scaffolding strategy.
2. urging educators to use these strategies in the educational process.
3. the necessity of inserting the strategy of instructional scaffolding in learning the skills of handball in the different age categories.
4. The necessity of conducting further studies that use new learning strategies and methods to learn and improve the level of technical performance in handball.

RESOURCES AND REFERENCES:

Arabic references:
4. Mariam Mohammad Ayid Al-Ahmadi, The Effectiveness of Using Metacognitive Strategies in the Development of Some Creative Reading Skills and Their Impact on the Cognitive Achievement of Intermediate School Students, the Faculty of Education, the University of Tabuk, Saudi Arabia, 2011.

Foreign references: