EFFECT OF KELLER'S STRATEGY ACCOMPANIED TO PHOTIC ENHANCERS IN MASTERING LEARNING THE PRECISION OF SOME BASIC VOLLEYBALL SKILLS FOR ELEVENTH-GRADER STUDENTS

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ABSTRACT

The aim of this study is to employ Keller's strategy that is concerned with individualizing learning in physical education class with photic enhancers and to identify its behavioral influence in learning some basic skills of volleyball. The researcher hypothesized that there are statistically significant differences in the results of tests of some volleyball skills in the pre and posttest of the experimental and control groups.

An experimental design with experimental and control groups was used to guide this study with equal control by the pre- and post-tests on a sample selected purposively from eleventh-graders (Applied track) in Al-Zawraa Secondary School - the Al-Rusafa Third Directorate of Education in Baghdad, for the academic year 2018-2019. The study sample represent 83.333 Experimental group (n = 31), control group (n = 30).

After determining the measurement tools, the pretest was done for each of the three skills in volleyball, then introducing the experimental variable in the study experiment and posttest. After statistical processing of the data, the researcher concluded that the application of Keller’s strategy in the physical education class helps to pay attention to the learners' privacy and individual differences among them in mastering spatial precision. Furthermore, the learners’ practice for predetermined exercises within the parameters of the application of Keller’s strategy helps learners to improve their mastery of the precision of the skills of smash serve, spike, and block wall. It is necessary to pay attention to increasing the teachers’ expertise in how to apply Keller’s strategy to invest it in individualizing the learning of the precision of skill performance in volleyball for eleventh-graders students.

Keywords: Keller's Strategy; Photic Enhancers, Volleyball

I. BACKGROUND AND SIGNIFICANCE

It is well-known that the consensus of modern schools in learning of all kinds emphasizes increasing the learner’s activity and put him at the top of the center of the educational process. This can be done via activating his role in acquiring knowledge and interacting with it to make behavioral changes expressed by the learning process. To avoid randomness in controlling this behavior, it is necessary to pay attention to determine this process within the parameters of an educational strategy to activate learning and achieve the objectives of the educational process, especially if that learning has some kind of previous experience, which is to be a base for storing information in the early stages of learning or initial acquisition of athletic skill in the game or specialized activity.

This will be one of the priorities of researchers and teachers in finding the best ways to enrich the skilled learning. This can be achieved by harnessing the cognitive and mental aspects in determining the control of motor behavior according to specific paths that appear in the form of a skill characterized by precision of achieving its goal. Badawi views that “When learning is active, most students do most of the work and use their minds to study ideas, solve problems, and apply what they have learned., The active learning is fast-paced, funny, and supportive; it is a personal engagement to learn something new well, because it helps to listen to it, see it, ask questions about it, and discussing it with others”. First of all, students need the practice; they learn things, try out skills, and do tasks that depend on the knowledge they already have, or should discover.”

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Rabea states that “The role of both the teacher and the student in the educational process is an agreed-upon, but the dispute is over the size of this role for each of them.” (12) Nabeel and Waleed indicate that "This type of education renders students search, induct, and elicit. Studies in this field indicate that active learning leads to the activation of the student's role in thinking and discovery." (17) Qatami states that "Ozil's goal is to study the learner's cognitive structure and higher mental processes, in order to achieve a meaningful learning and increase the level of effectiveness of the mental processing of information. This is done by employing multiple cognitive mental processes at reasonable times that facilitate the task of storing, transferring, and integrating this knowledge into the learner’s cognitive structures." (19)

Jarwan states that “The teacher should clearly determine the activity objectives in the form of tangible, measurable, and verifiable learning outcomes.” (9) Thus, Keller presents a strategy that could be compatible with this endeavor to improve the educational process, which Maree defines as "the personal education system differs from other methods of self-learning with specific attributes based on mastery, speed, printed word, teaching guides, and participation of outstanding students in the education process." as observers, and define the objectives and content for the learner and a guide to the learner and tests. This model differs from the programmed education in that it does not revolve around educational materials with a special design, organization, and form. This method focuses on providing students with rewards and reinforcements that all students can accept them, which can be in the form of marks or certificates or personal interest, social satisfaction, acceptance, compassion, and behavior different from others.” (2)

This is reinforced by Al-Heela in that “It also focuses on the importance of promoting and rewarding educational behavior to the maximum extent possible, while at the same time aiming at minimizing the chances of frustration and extinction and eliminating fear and punishment, where Keller emphasizes the use of reinforcement in its various forms during the classroom activity.” (14)

Ahmed and Mahmoud state in the characteristics of this strategy that "It constitutes an educational movement to individualize education owing to the nature of the characteristics that distinguish it from others and the most important of these characteristics is to leave a large room for the individual to learn according to his own speed and then freedom of movement, and the use of outstanding trainee students who have completed their courses to work as assistants in explaining some of the mysterious or difficult aspects and clarify those who need it, and determine the level of pre-mastery over learning, where it is not allowed to pass an educational session and move to another, and the possibility of benefiting conventional teaching methods as aids to increase understanding of a unit or topic in a particular unit. In addition to the possibility of adopting various ways that enable the individual to master his/her learning, whether these ways are desk or instructional or audiovisual or other ways. The ultimate criterion for success is to pass the specified level of mastering a given session regardless of the time and effort spent.” (3)

Interestingly, the specificity of volleyball skills calls for individualism in learning by virtue of changing positions and the similarities of the motor duties of each player, except for the defender in some cases. Hence, most of the conventional methods that teachers use confuse the organization of the learner’s information who needs to refine skills in a manner that fosters the individualization of education and increase the learner’s activity.

As is well known, the spatial precision in the estimation of distances and calculation of perception about them is an internal process occurs in the learner. Such a process differs from one learner to another according to the natural readiness of neuromuscular control after passing from the motor cortex to control this mastery which is a need and necessity to master all skills in various games and activities and are not limited to Volleyball skills.

Employing the strategies that specialize in cognitive science in physical education needs to be supported in a way that raises or increases the learners’ excitement in attracting attention to concentrate the motor duty as enabling factors for this learning, including photic enhancers by placing bright spots in the volleyball field with the goal of directing balls toward them precisely.

This study calls for experimentation with the Keller’s strategy which considers the individual differences. This study aims to employing Keller’s strategy which is specialized in individualizing learning in physical education class with photic enhancers and identifying their behavioral effect in learning some basic pre and post skills for the experimental and control groups. There are statistically significant differences in the results of some post volleyball skills in the experimental and control groups.
II. METHODS

In light of the data of the parameters of the study problem, the researcher used the experimental research methodology, which is defined as “objective observation of a specific phenomenon that occurs in a situation characterized by an arbitrator, which includes one or more variables, while other variables are established.” (11)

Target Population

The limits of the research community were the eleventh-grader students (Applied track) in Al-Zawraa Secondary School for Boys – Al-Rusafa Third Directorate of Education in Baghdad City, who are enrolled for the academic year 2018-2019. The study sample included (72) students who were purposively selected after excluding 11 students who are fail and absentees. Class (A) was randomly selected to be the experimental group (n = 30 after excluding fail and absentees) and class (B) to be the control group (n = 31 after exclusion). The study sample represent 83.33% of the original populations.

Measurement Tools and Tests

The measurement tools include tests for each of the following skills:

1. Precision of smash serve: For specific areas of (40) degrees. (13)

2. The precision of smash rollback: for two areas diagonal and straight from (40) degrees. (1)

3. The precision of the blocking wall: repeated from (10) degrees. (8)

After reviewing the literature relevant to Keller’s strategy and the adoption of what came in the individualization of education that focuses on considering individual differences, the researcher used such a strategy in exercises in the main section of the weekly physical education lesson for the eleventh-graders with the help of photic enhancers in different colors help learners to direct the balls according to the motor duty of the precision of each skill that the teacher controls its location, color, and timing of its glow. The researcher applied Keller’s strategy with one educational session per week. Three sessions were allocated for each skill according to the recommendations of most kinetic literature. The duration of implementing the study curriculum is over nine weeks that are consecutively implemented according to the following stages:

1. Mastering: Keller's strategy emphasizes mastering the precision of the skilled duty for each of the three volleyball skills under investigation to move on to the next duty.

2. Educational Session: Each session is organized to include specific and clear behavioral objectives and interrelated steps with logical sequence showing the course of education for the precision of skilled performance.

3. Guide: Keller’s strategy requires the existence of a printed guide intended to guide learners in the educational sessions. It is required in this guide according to this strategy to include an introduction to the session, and instructions and specialized instructions with each skill.

4. Faculty: A team of teacher and observers supervise the implementation of the application of Keller’s strategy in the physical education class.

5. Immediate feedback: Feedback is defined as information that an individual gets as a result of a given performance.

6. Evaluation: A process of judging what skill exercises have been carried out for the purpose of preparing or planning information that benefit the exercise or forming judgments that are used to make a better decision among multiple alternatives.

7. Self-tests: These tests be in each educational session. Its goal is to know the learner's improvement to reach mastery of precision for each skill.

8. Repeated tests for each educational session: These tests are applied after the end of the learner’s readiness to move to the next stage.
9. Final tests: These include all educational sessions that the learners received.

After planning the educational sessions and preparing the measurement tools for this study, the researcher applied the experiment and conducted the pretest tests for both groups and then introduced the experimental variable to the experimental group to end the post-test according to the determinants of the experimental design. Collect and classify data for each laboratory for statistical processing by SPSS version V25, statistical package for social sciences, by calculating percentage values, mean, standard deviation, and T-test for samples Correlated, T-test for unrelated samples.

III. RESULTS

Table 1. Results of pretest for the study and control groups

<table>
<thead>
<tr>
<th>Tests</th>
<th>Study Group</th>
<th>Control Group</th>
<th>T-value</th>
<th>Sig.</th>
<th>Assess.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Precision of Jump Serve</td>
<td>30</td>
<td>12.5</td>
<td>3.093</td>
<td>31</td>
<td>13.06</td>
</tr>
<tr>
<td>Precision of Spike</td>
<td>30</td>
<td>9.57</td>
<td>3.52</td>
<td>31</td>
<td>10.06</td>
</tr>
<tr>
<td>Precision of Block Wall</td>
<td>30</td>
<td>2.53</td>
<td>0.973</td>
<td>31</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Degree of freedom (n-2) = 59

Assess. = Assessment, N= Number, NS = Non-significant, SD = Standard Deviation, Sig. = Significance

Significance level (0.05), T-value is non-significant when p-value > 0.05

Table 2. Results of the study and control groups in the pretest and posttest

<table>
<thead>
<tr>
<th>Scale and Tests</th>
<th>Group</th>
<th>Pretest</th>
<th>Posttest</th>
<th>F</th>
<th>SD</th>
<th>T-value</th>
<th>p-value</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precision of Jump Serve</td>
<td>Study</td>
<td>12.5</td>
<td>3.093</td>
<td>28.17</td>
<td>1.085</td>
<td>15.667</td>
<td>3.527</td>
<td>24.332</td>
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<tr>
<td></td>
<td>Control</td>
<td>13.06</td>
<td>2.048</td>
<td>20.77</td>
<td>2.186</td>
<td>7.71</td>
<td>3.288</td>
<td>13.054</td>
</tr>
<tr>
<td>Precision of Spike</td>
<td>Study</td>
<td>9.57</td>
<td>3.52</td>
<td>25.23</td>
<td>0.971</td>
<td>15.667</td>
<td>3.809</td>
<td>22.53</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>10.06</td>
<td>3.224</td>
<td>20.35</td>
<td>1.78</td>
<td>10.29</td>
<td>3.514</td>
<td>16.306</td>
</tr>
<tr>
<td>Precision of Block Wall</td>
<td>Study</td>
<td>2.53</td>
<td>0.973</td>
<td>8.23</td>
<td>0.626</td>
<td>5.7</td>
<td>1.236</td>
<td>25.26</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>2.1</td>
<td>0.908</td>
<td>5.39</td>
<td>0.882</td>
<td>3.29</td>
<td>1.419</td>
<td>12.912</td>
</tr>
</tbody>
</table>

Degree of freedom (n-1) for each group, Measurement unit is degree

Assess. = Assessment, N= Number, F = F-Test, SD = Standard Deviation, Sig. = Significance

Significance level (0.05), T-value is non-significant when p-value > 0.05

Table 3. Results of posttest for the study and control groups

<table>
<thead>
<tr>
<th>Tests</th>
<th>Study Group</th>
<th>Control Group</th>
<th>T-value</th>
<th>Sig.</th>
<th>Assess.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td>N</td>
<td>Mean</td>
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<td>8.23</td>
<td>0.626</td>
<td>31</td>
<td>5.39</td>
</tr>
</tbody>
</table>

Degree of freedom (n-2) = 59, Measurement unit is degree

Assess. = Assessment, N= Number, NS = Non-significant, SD = Standard Deviation, Sig. = Significance

Significance level (0.05), T-value is non-significant when p-value > 0.05

Reviewing the pretest and posttest results for the study and the control groups reveal that the mastery of the precision of the three volleyball skills under investigation have improved for learners in both groups (Table 2). Reviewing the posttest results for the study and the control groups reveal that the learners of the experimental group outperformed the learners of the control group. The researcher attributes this finding to the good use of Keller’s strategy in the skilled learning of some volleyball skills, where their exercises focus with a number of
times of performance on the particularity of each learner despite their relatively large number, and the appropriateness of the nature of its stages, steps, and what they impose of duties on the learner.

As well as the role of photic points that the teacher worked in changing their positions and control their colors and timing of glow, which were able to help the learner to organize the neural impulses appropriate for precision. This is called increasing the neuromuscular control to direct the balls with spatial precision depending on the type of skill and content of the test. There was an important role for assessment in activating the system of comparison between what was done and what must be done of the motor duty, in order to reach the desired performance of precision.

The most accurate explanation for the improvement of this phenomenon is the improvement of motor programs in the brain with considering the particularity of the comprehension of each learner and the processes of retrieval of information in the previous stage of learning. The eleventh grade a second stage to learn the skills of volleyball in high school. Such a retrieval is characterized by organization and precision in the completion of that motor duty. Mona and Jamal mention that "the necessity of assessing the level of motor development that the student attains to determine what he has learned and what he has not yet learned." (15).

Barakat stated that "The goal of education according to Brunner is to convey knowledge to the learner and also to develop a positive attitude towards learning, and to develop the learner's investigation and discovery skills so that he/she can positively interact with their social and physical environment and prepare them for mental development". Brunner gives the learner an active role in the development of information and he believes that the learner should be able to shape his problems and seek alternative solutions rather than just one answer; he is interested in the personal way in which each person develops his concept about himself and his world. (18)

Melhem points out in the interpretation of individual learning "The schools of education that care for developing the individual and symbolic abilities and these patterns are based on good planning for education in a way that facilitates the learner to follow his/her own learning and make his own way by him/herself. These models work to triggering the learner’s motivation and provoke his/her self-activity toward the learning objectives in the context of a specified plan"(5).

Al-Fatlawi stresses that "the individualization of education is a systematic change aims to caring for the learner and focusing on him/her in the teaching and learning processes and designing programs for groups of individuals. It leaves their progress to their individual abilities and self-speed. It means providing education that considers the learners’ individual differences and gives the individualization of education an important role for the teacher." (6)

According to Abdul Rahim, "it is clear from the opinions and thoughts of Piaget about cognitive learning and the growth and stages of thinking that: Learning is an active and continuous process that leads to the learner's creation of new knowledge structures (knowledge systems), which achieve a successful interaction with sensitized environmental stimuli and benefit from what the learner has learned of experiences, in new situations." (10) Al-Dulaimi also points out that "an athlete who is practicing toward a particular goal will have a motive in his/her work, and that the purposeless work is futile and neglected." The athlete coach should help the athlete in setting an appropriate goal for him that he/she can achieve in order for the exercise to be valuable and the athlete to know his/her progress through the positions and movements that the body or some parts of the body perform and are exercised or performed according to scientific and educational principles aims to build the body to reach the learner or player to the best possible performance in various games, events and specialized activities."(16) Majeed and Al-Bayyati view that "Notifying the learner with the results of his/her work and compare it to his/her colleagues and his/her perception of the progress or delay is one of the strongest motivations for learning. While, he found that neglecting and not informing the learner with his/her situation or caring for the extent of progress or delay can lead the learner to boredom and laxity". (7)

**IV. CONCLUSIONS AND IMPLICATIONS**

1. The application of the (Keller) strategy in the physical education lesson helps to pay attention to the particularity of learners and individual differences among them in mastering spatial precision.

2. The learners’ practice of specified exercises within the Keller’s strategy implementation helps learners to improve their learning of mastering the precision of the skills of smash serve, spike, and block wall in volleyball.

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3. Attention must be paid to increase the experience of teachers in how to apply Keller’s strategy to invest it in the individualization of learning the precision of skilled performance in volleyball for the eleventh graders.

REFERENCES
18. Barakat H. Learning theories. King Saud University, College of Teachers, 421, 2011, p. 3.