

The Divergent Thinking Method as a Proposed Educational Program Effect in Developing the (Serving & Receiving) Skills in Volleyball for the Secondary School Students

Guergour Mohamed¹, Silarbi Charef², Mdjahed Mostafa³

¹ University of Tissemsilet, Laboratory of Measurement and evaluation in physical and sports activities (Algeria) guergour-med@outlook.fr.

² University of Tissemsilet, Laboratory of Measurement and evaluation in physical and sports activities (Algeria) silarbic@yahoo.fr

³ University of Tissemsilet, Laboratory of Measurement and evaluation in physical and sports (Algeria) activitiesmoustafaloula@gmail.com

Received: 10/2022

Published: 11/2022

Abstract:

This study aims to know the impact of the use of the method of complex thinking (problem solving) in improving and developing the performance of (service and reception) skills with the volleyball, among the first secondary students class, and to achieve the aims of this study, the researcher has used the experimental method, in which, the study sample was divided into two equal groups, the number of each group contains (20) students. A first experimental group, taught in a solving problems method and a second controlling group, taught according to the classic style, and as a tool for collecting data, the researcher has used two reception and transmission skill tests. The results showed a performance level improvement for both groups, with a superiority to the problem solving method in improving and developing the two technical performance under study.

Keywords: Volleyball, Reception and Service, Divergent Thinking Style.

Tob Regul Sci.™ 2022 ;8(1): 2616-2626

DOI: doi.org/10.18001/TRS.8.1.194

Introduction

Physical education is no longer just a physical activity aimed at strengthening muscles and body organs, but rather, it is now an educational art that has its origins and rules, its goals that integrate with the goals of other aspects of the educational process. There is no doubt that this development in the concept of physical education is mainly related to the development of the concept of education in general and the development of the concept of the school function in particular. Modern education aims to raise the individual with an integrated body education, mind and spirit within a society's values framework, traditions and customs (Faraj Moaawad 1998) and sports education plays a prominent role in this integrated education, as it is a part of

the public education that aims to raise an individual integrated education through the activity of his first way to move the body using the latest and deeper educational theories, which is education through practice.

And since the scientist Moska Mostin has introduced his famous series in teaching methods, which he called (Spectrum of Teaching styles) in teaching ways and techniques In the mid-sixties of the last century, the field of teaching physical education has witnessed a great development, and has attracted the attention of many scientists and scholars, some of them even described the Mostin methods series as the event that created a major transformation in the field of teaching physical education in the modern era (Al-Naddaf, 2004).

The teaching methods presented by Mustin are divided into two main groups: the first group is called direct instruction, in which the teacher is the decision-owner in making all decisions related to the educational process from planning, implementation and evaluation, and the second methods group is called indirect instruction. In which the learner is the axis of the educational process, as he learns through his use of various advanced intellectual processes such as comparison, emulation, analysis, classification, problem solving and innovation (Al-Hayek & Al-Hammouri, 2005).

One of the methods presented by Mostin, which he believes is working on developing the students abilities and their knowledge , is the complex thinking method (problems solving) and one of the modern indirect methods that achieves the student's positiveness by participating in solving meaningful problems and this is done by giving him an active role and implicating him in the learning process so he could acquire an educational experiences with a desirable impact on his behavior (Hamdan & al., 1995).

The education process is generally one of the most important educational processes that need proper scientific planning in order to reach its objectives, namely to communicate information to the learner in the best possible way, and motor learning depends on the effectiveness of the teaching methods used in teaching the motor skills of different sports and activities to reach the acceptable level of performance within its time (Mufti & Writer, 2004) so sports education teachers seek the best modern teaching methods that help students learn better, And interact with the Educational process.

And a positive participation leads to learning some basic skills in different sport. Therefore, it became clear that the development of teaching methods is one of the important elements of modern education and dealing with the material in an educational way for the purpose of providing students with the required skills away from the method of memorization and stocking loads of informations, which leads to forgetting them and not following the scientific method in order to enable him to understand and express himself correctly , as some sports activities are considered difficult, which demands following appropriate learning styles and effectiveness methods in order to give the learner an opportunity to think and become independent from his teachers. The guided discovery method, which is one of the modern methods that gives the student an active role in the learning process, to gain educational experiences, by creating

The Divergent Thinking Method as a Proposed Educational Program Effect in Developing the (Serving & Receiving) Skills in Volleyball for the Secondary School Students

educational situations in front of the learner, which includes problems that develop in him a sense of bewilderment and then he performs the process of investigating information in order to recall the behavior that leads to the research.

The problem-solving method can be defined as a method based on raising a problem that interests students, attracts their attention, related to their needs, which pushes them to think, study and research in order to solve this problem (Al-Amin, 1992) and the teacher has a role in choosing The problem that is appropriate to the students' level and related to the subject matter and presented in a way that nourishes their enthusiasm and desire to solve it, because without the students' awareness of the problem and the desire to solve it, using this method of teaching will not succeed (Ryan, 1984) and solving problems consists of the following stages and steps:

- 1- Recognizing the problem, as it requires noticing the problem as soon as it arises or when feeling it, which is necessary in capturing the students' attention and stimulate their thinking.
- 2- Defining the problem, as it determines the topic of the problem and knowing its dimensions and characteristics.
- 3- Collecting facts and information related to the problem, which is the process of reasoning to solving the problem to obtain these facts and information and to understand the relationships between them.
- 4- Reaching hypothesis related to the problems solutions, as the students, through their understanding of the nature of the problem, try to assume solutions to the problem and study this hypothesis before judging its validity.
- 5- Implementing ideas and testing the correctness of solutions, and these steps help the student in revealing the invisible aspects of the problem and that the individual begins to work and fix the error whenever it appears during implementation (Al-Amin, 1992).

Based on what was noted , the importance of the research emerged to provide a model for the use of one of the modern educational methods (problem solving) that is axed on raising a problem that interests students and attracts their attention and pushes them to think and study in order to solve this problem and find correct solutions to reach the best method leading to this result (Al-Amin, 1995) Hence, the importance of the research lies in the use of the divergent thinking method and knowing its impact on developing the skills of sending and receiving, especially after it was noted that the traditional method that puts the student as a recipient, and puts all lesson decisions in the hands of the teacher is the most used method in teaching motor skills for various sports games and activities. And that there is a clear omission of the modern teaching methods in the teaching of physical education that focus on the role of the learner and his effective participation in the educational process.

It is also necessary to point out the lack of studies that dealt with the divergent thinking method (problem solving) with two skills in volleyball, and given that most studies consider the clarifying exposition method as a traditional method, and this is not true as pointed out by Mustin, the exposition method is considered valuable and has its Evolutionary channels and its advantages, and it cannot be considered in any way a traditional method, so it was employed in an

The Divergent Thinking Method as a Proposed Educational Program Effect in Developing the (Serving & Receiving) Skills in Volleyball for the Secondary School Students

experimental group. All this prompted the researchers to conduct this study on first year secondary students to improve and develop the skills of sending and receiving volleyball using the exposition method and the divergent thinking method, because the latter creates a better educational environment for us, and increases the students' motivation to acquire and master the skills and motor abilities associated with volleyball.

From this standpoint, we ask the following question:

Does the proposed educational program using the divergent thinking method affect the development of the sending and receiving skills in volleyball for first year secondary students?

Objectives

The objective of the study was to identify the effect the proposed educational program using the divergent thinking method in developing my skills (transmitting and receiving) in volleyball for secondary school students.

Methods

Methodology: Researchers used the experimental design through equivalent groups method, because they search for the reason, and how it happens, defined as “what the researcher in puts as variable on the reality, and this is an intentional change.

Participants: The research community determined the students of the first year of secondary school, who reached the number of (204 students).

Research sample: The research sample was randomly selected from the original research community, with a number of (40) students, who were divided into two equal groups, with (20) students for each group, and thus the percentage of the research sample is (20%), which is An appropriate proportion to truly and honestly represent the research community, as shown in Table (1).

Table 1

With description of the research sample

	Number	Groups
Participation in the survey experience	30	1
Basic study sample	40	2
Global students number	70	3

Educational program: (learning units in volleyball)

- The program in its general sense means a plan that must be followed, and the physical and sports education program is a set of experiences practiced by the participants through sporting events. Education and Adaptation Methods, and in this study we adopted learning units in volleyball for two teaching groups (the first experimental group taught in a demonstration method, and the

Guergour Mohamed et al.

The Divergent Thinking Method as a Proposed Educational Program Effect in Developing the (Serving & Receiving) Skills in Volleyball for the Secondary School Students

second in a divergent thinking method (problem solving). To prepare the content of the educational unit, (program) Teachers and inspectors of physical education and sports, were consulted and greatest reliance was put on the physical education and sports curriculum for the secondary grade.

Preparing the educational unit using a divergent thinking style (problem solving):

- The two researchers relied upon developing the educational unit in a divergent thinking style on scientific sources (Al-Habashi, 1984), (Lutfi, 1999), (Abdul Karim, 1994). The educational unit includes the following elements:
 - The problem to be discussed - Academic level - Concepts or principles to be taught.
 - Necessary tools and devices - Discussion questions - Students' practice of discovery activities.
 - The sequencing of the paragraphs through an appropriate design of the verbal paragraphs, through
 - The proposed program contains (18) educational units, as (9) educational units were distributed for the demonstration method, and (9) units for the divergent thinking method.
 - The program contains basic skills in volleyball (serving and receiving) with two teaching methods from Moska Mostin. The two researchers returned in writing the content of these units to a number of studies and resources of physical education and attached documents to the secondary stream, due to the important available guidelines. Assisting the teacher in developing the contents of the various educational units.

Anthropometric measurements (age, height, weight):

The age was calculated by recognizing the student's date of birth by the administration, the height was measured using a decimeter, and the weight was identified using a medical scale.

Skill Tests: The following skill level tests have been chosen:

- A- Technical performance test for the skill of serving (serving from bottom to top) in volleyball.
- B - Testing the technical performance of the reception skill (receiving the transmission) in volleyball.

Results

- View the results of tribal and remote tests of the of the first and the second experimental group

Table 2

*Comparing the results tests (pre and post-test) of the first experimental group
(Illustrative explanation)*

Calculated T	Post-test		Pre- test		Variation	Tests
	Standard Deviation	Average Calculated	Standard Deviation	Average Calculated		
6.38	33.82	25.41	8.52	16.11	serving	1
12.04	7.23	40.92	5.07	30.90	receiving	2

$T_{tabular}=2.09, p=0.05$

It is clear to us from Table No. (02) that the calculated (t) value was greater than its tabular value of (2.09) at the level of significance (0.05) and below the degree of freedom (19), which indicates the existence of significant differences between the pre and post tests for the explanatory group in the tests Volleyball service and receiving skills, for the benefit of post-tests.

Table 3

Comparing the results tests (pre and post-test) of the second experimental group (Diverged thinking)

Calculated T	Post-test		Pre- test		Variation	Tests
	Standard Deviation	Average Calculated	Standard Deviation	Average Calculated		
21.46	8.84	36.79	6.85	17.51	service	1
13.29	20.35	45.10	3.65	30.90	reception	2

$T_{tabular}=2.09, p=0.05$

It is clear to us from Table No. (03) that the calculated (t) value was greater than its tabular value of (2.09) at the level of significance (0.05) and below the degree of freedom (19), which indicates that there are significant differences between the pre and post tests of the divergent thinking group in the tests of Some volleyball skills (under study) in favor of post-tests.

Comparison of dimensional results

Table 4

Compare the results after tests between the first and the second experimental group (Diverged thinking) and (illustrative explanation)

Calculated T	Explanatory clarification group		Diverged thinking group		Variation	Tests
	Standard Deviation	Average Calculated	Standard Deviation	Average Calculated		
7.52	33.82	25.41	8.35	36.79	Service	1
4.05	7.23	40.92	20.35	45.10	Reception	2

$T_{tabular}=2.02, p=0.05$

It is clear to us from Table No. (04) that the calculated (t) value was greater than its tabular value of (2.02) at the level of significance (0.05) and below the freedom degree of (38), which indicates the existence of significant differences between the two groups of divergent thinking and

explanatory clarification in the tests of some Volleyball skills (service, receiving) for the benefit of the divergent thinking group.

Discussion

Depending Through the table No (02), which shows that there are significant statistically differences between the pre and post tests of the experimental group , on which the imperative method (the explanatory analysis) was applied for the performance level of the skills under study, in which the differences were in favor of the post measurements, and the researchers attributed the reason for the significance of these differences to The physical education classes, which used the demonstration method , and took 18 weeks with a weekly educational class, and had a positive impact on the level of technical performance of the skills (service, receiving), as they were under the factor of arrangement and gradation in difficulty as well as the importance of continuity of training and perseverance in implementing the lessons in their usual and familiar manner , the focus of the students and their desire to learn these skills as one of the most important skills that distinguish players in the game of volleyball. (Mohamed Hassan) indicated in this regard that (the motor performance of the skill is accurately fixed in order to reach the semi-automatic stage, and this can be through Repetition and increasing the number of times to perform the entire movement under fixed conditions) (Mohamed Hassan, 1998). Developing and realizing the skill, through a clear gradation in the presentation of the two preparation skills in their three sections (preparatory, main, final)

This what was confirmed by some sources, as 'the use of illustrative images that were included in the paragraphs of the educational program with the help of exposition of the skill live model, which has helped the learner to understand and comprehend the movement' nature (Adel Fadel, 2000), as well as the introduction of some special exercises based on the repetitions performed by the this group sample during the educational units , assigned for it within the educational program , which has led, in its turn to an increase in the acquisition of technical performance especially for the service and receiving skill , as the sources confirmed that , many exercised learning repetitions during practical application helps to acquire knowledge .

Based on that, our study agrees with the results of Al-Shamayleh study (2003), which aimed to identify the effect of using three teaching methods (compulsory, applied, and comprehensive) in physical education in learning the skills of front-rolling from flying, and jumping openly from the fifth grade jumping horse, The study showed that the three teaching methods positively affected the learning of the two skills, as the imperative method got the highest scores, then the comprehensive method, followed by the applied method in the skill of jumping openly from the horse.

Our study also agrees with the study of the Mufti (2004), which aimed to know the effect of some teaching methods in raising the level of female students to the acceptable limit and during a

specific period of time. The level of learning free swimming and within the specified time, and that the used methods contributed to the development of the level of motor performance.

The researchers believe that this effect cannot be neglected, especially when it is used at the beginning of learning with new students in learning basic motor sports skills, and its role in providing a large amount of information and knowledge to these students, and its ability to control the increasing numbers of learners, in one semester if we take into consideration the teacher side.

Based on what was noticed, and through the obtained results, we can also say that the first hypothesis that says: **There are statistically significant differences between the results of the pre and post tests for the control group (the imperative method) for students of the first year of secondary school has been achieved.**

Through the results of Table (3), it appears to us that there are significant statistically significant differences between the prior and remote tests of the second experimental group (on which the problem-solving method was applied) in improving the performance of the service and reception skills and in favor of the post tests, and the researcher attributes the significant reason for these differences to positive learning. In a problem-solving method, as its use has made an effective contribution to learning these two skills because it is one of the modern scientific methods in which the learner is the center of the educational process, which increases his motivation towards the learning process and works to provide sufficient time for discovery, research, investigation, and then application, providing information and correcting errors, with more skill training opportunity. (Fayza, 2001)

We agree in our study with Ahmed Zakia Ibrahim (in 1990) on the effectiveness of teaching by the method of explanation and presentation and the method of problem solving in improving some of the cognitive-motor abilities of primary school students. We agree in our study with FALAH Djaaz Chelch (2006) In the influence of problems solving method on learning the hard hitting in volleyball, so that the physical performance of this skill (diagonal and straight) could be improved compared to the gradual (ordinary) method. This would improve and develop the learner's level of performance.

This also indicates the positiveness of learning in a problem-solving method, as the position of the learner in this method is a positive, active and effective one, and not a receiver for everything that is given to him, given its correctness. His attitude is an attitude of an exploring researcher , the most important step in exploring the oriented discovery is limiting the steps chronicles in front of questions and solution keys which lead the learner to discover the final result, and each step is built on the response that was achieved in the previous step, and problem solving must be built to lead to one correct response to one key (Subhi, 1998).

According to the results obtained, and through what was noticed, we can also say that the second hypothesis that says: **There are statistically significant differences between the results of the pre and post tests for the experimental group (diverged thinking) for first year secondary students have been achieved**

The Divergent Thinking Method as a Proposed Educational Program Effect in Developing the (Serving & Receiving) Skills in Volleyball for the Secondary School Students

Through the Table (4) we can notice the existence of meaningful statistically significant differences between the two research groups in the post tests in volleyball learning preparation and the perfection of some abilities in favor of the second experimental group (to which the problem solving method was applied) and this indicates the positive learning in a problem-solving style where The statistical differences were significant , in favor of the second experimental group, which was shown in Table (9), a result that the researchers attribute to the effectiveness of the problem-solving method in teaching the two skills in volleyball more than the demonstration method , as one of the successful teaching methods used in teaching many skills and games in order to Achieve better performance , because the student depends on himself in creating many movements that lead him to perform the basic skill in the best way. (Hamdan et al. 1995) It should be noted here , that changing the method is also important in teaching skills, especially If this method is taught as in the case of problem-solving method, which is characterized by asking questions or exposing problems by students and finding better solutions to them by the teacher help to be more practical in finding alternatives to the typical performance , by applying the skill vocabulary , and this is consistent with what was mentioned by (Mohammed Hassan) when he emphasized that (Analysis and in-depth performance. The researchers believe that mastering the skill, rather, performing it quickly and automatically under changing conditions and in a different way, in ad equation to the conditions and smooth performance or easy abstaining, as some prefer to call it fluidity in performance) (Mohamed Hassan, 1998)

In Our study we agree with Nahida Abdel Zaid Al-Dulaimi et al. 2006, which was about the effect of problem-solving and explanation methods in developing some abilities and learning to prepare for volleyball, as learning by a problem-solving method is more positive than the explanatory method in learning the skill of preparation and developing some of the abilities associated with it. In Our study also we agree with the study of Falah Jaaz Shalash (2006) on the impact of the problem-solving method in learning the skill of crushing in volleyball, where the results indicated that the problem-solving method was more effective than the gradual (ordinary) method in improving the skill of the sample members.

What is worth noting is that the development of these skills, which was according to the problem-solving method, was the result of the transmission of the effect of learning, as the learning that took place in the skill of serving and preparing in the educational program came as a result of preparation, mental and physical training, and the use of students' previous experiences in facing the motor problems presented in The lesson who uses their natural tendency towards experimentation and discovery to reach the correct position of movement , and link new information with previous experiences and information, which helps them to obtain good results and tangible progress in the skill being taught, and (Abujado 2000) confirms in this regard: The student is helped to link new information and experiences to the old ones that raises the information that the learner needs in understanding the skill (Abugadu, 2000).

The Divergent Thinking Method as a Proposed Educational Program Effect in Developing the (Serving & Receiving) Skills in Volleyball for the Secondary School Students

According to the reached results and through what was mentioned above, we can also say that the third hypothesis that says: **There are statistically significant differences in the post measurement between the results of the control and experimental sample of first year secondary students has been achieved.**

By verifying each of the sub-hypotheses of the research, we can say that the general hypothesis that says: **The proposed educational program using the divergent thinking method affects the improvement and development of the serving and receiving skills in volleyball for first year secondary students. Has been achieved.**

Conclusions

Based on the presentation and the results discussion, **the researchers arrived to these conclusions:**

- The divergent thinking method helps to increase knowledge and performance requirements, which leads to student's assimilation ease and understanding facilitation due to the performance related to the skills in question.

The guided discovery method had a positive effect on improving the performance level of volleyball skills.

- The divergent thinking style over performed the presentation style (commendatory) in the degree of influence on the level of skill performance. **The researchers recommend the following:**

- The necessity of using the two methods (diverged thinking, demonstration (commandment) in the physical education class to raise the level of student's technical performance of volleyball skills, and emphasizing the application of the divergent thinking method.

- Conducting similar studies that use the same teaching methods in this study on other variables (for example, psychological) other than technical performance and at other educational levels and stages.

- Conducting other studies to find out the effect of using teaching methods on motor skills for different sporting events.

- Conducting similar studies on other teaching methods from the spectrum of teaching methods, especially indirect methods, and to a greater extent on creativity methods (directed discovery, learner design of the educational program, initiative method in learning, self-teaching).

Acknowledgements

We appreciate all the people (administrators, Professors and students) who helped us finish this work.

References

1. MOHSEN MUHAMMED HOMS 1998. The guide in teaching physical education. Alexandria, the source of knowledge, pp.37-38.
2. MUHAMMED SAEED AZMI 1996. Methods of developing and implementing a physical education lesson in the basic education stage between theory and practice. Alexandria, the source of knowledge, pp.57-58.
3. MUHAMMED MAHROUS QANDIL 1998. The basics of physical exercise. Alexandria, the source of knowledge, pp.67-74.
4. MUHAMMED NAWAL ATTIA 2011. Psychology and Social Adaptation. Cairo, Book House, pp.97-100.
5. NABIL SUFIAN 2004. The Brief on Personality and Psychological Counseling (I 1), Cairo, Publishing House for Distribution, pp.71-78.
6. WAGDY IBRAHIM AZIZ 1997. Effective Teaching Skills (version 1), Cairo, Library Anglo Egyptian, pp.43-48.
7. YASSIN KAMEL HABIB 1994. Teaching Methods and Practical Education in Physical Education (unpublished notes). Egypt, Faculty of Physical Education in Port Said, pp.51-53.
8. ABD AL-KARIM MUHAMMED AL-SAMARRAI ABBAS AHMAD SALIH AL-SAMARRAI 1991. Teaching competencies in the methods of teaching physical education. Baghdad, University of Baghdad, pp.413-418.
9. MUHAMMED NAWAL ATTIA 2011. Psychology and Social Adaptation, Cairo, Dar Al-Kitab, pp.316-318.
10. REFAAT MAHMOUD BAHGET, Group And Individual Education, 1998. 1st Edition, Cairo, World of Books, pp.316-318.
11. SAMIA FARGHALI, 2002. Teaching and Field Training in Physical Education, Alexandria, Dar Al-Hekma Library, pp.130.
12. AL-TIKRITI, WAHID YASSIN And AL-OBAIDI, HASSAN MUHAMMED AL-OBAIDI 1999. Statistical Applications and Computer Use in Physical Education Research (Version 1), Mosul, Dar Al-Kutub for Printing and Publishing, p.152.
13. MARWAN ABDEL-MADJID IBRAHI; (no history) scientific bases and statistical methods for tests in physical education and sports. Egypt, Arab Thought House, pp. 412-419.
14. MOSSTON, M. &ASHWORTH, S. 2002. Teaching Physical Education 5thed, p.65.
15. New York: Macmillan College Publishing Company.
16. BERTHOLD. F. And BERND. Z. 1996. Selected aspects of the developments of men's volleyball, The Coach, pp. 156-158.
17. HAMPTON, G.E; 1990. The effect of video-taped loop on the knowledge of performance and know ledge on results, journal of motor behavior, * OkeBUkOIA P. A. 1989. Cooperative Learning and Student Attitude to Laboratory Work, School Science and Mathematics, Vol. 86, No. 7, p.180.