El efecto de la estrategia de los polos fotomagnéticos en el aprendizaje de la habilidad de rematar en voleibol

The effect of the photomagnetic poles strategy on learning the skill of spiking in volleyball

Authors

Heba Abd Alrahman Azez[1]
Najlaa Abbas Al-Zuhairi [1]

[1]College of Physical Education and Sports Sciences for Woman / University of Baghdad, (Iraq).

Corresponding author:
Heba Abd Alrahman Azez
Heba.Abd2304m@copew.uobaghdad.edu.iq

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Abstract

Objective: preparing educational units for the magnet poles strategy in learning the spiking skill in volleyball, and identifying the effect of the magnet poles strategy in learning the spiking skill in volleyball for female students.
Research methodology: The experimental design with two equal experimental and control groups with tight control was also adopted in the pre- and post-tests. The boundaries of this research community are represented by fourth-grade middle school students at Basra Girls' Middle School (2024-2025), whose total number is (90) students, distributed by nature into 4 sections. Sections (A-B) were determined by lottery, so that Section (A) represents the experimental group and Section (B) represents the control group. Unsatisfied students and those who are frequently absent from the two groups were excluded. (15) students were randomly selected from each section, also by lottery, so that the total research sample reached (30) students, representing (33.3%) of this community. (15) students were also selected from Section (C) for the exploratory sample, representing (16.6%) of their original community
Result: it is clear that the students of both the experimental and control groups all learned the skill of crushing in the results of the post-tests than they were in the results of the pre-tests.
Conclusions: The strategy of the two poles of the light magnet can be applied in learning the skill of hitting the ball in volleyball for fourth-grade middle school students.

Keywords

Photomagnetic pole strategy; spiking skill; volleyball.

Resumen

Objetivo: preparar unidades educativas para la estrategia de los postes magnéticos en el aprendizaje de la habilidad de rematar en voleibol e identificar el efecto de la estrategia de los postes magnéticos en el aprendizaje de la habilidad de rematar en voleibol para estudiantes femeninas.
Metodología de investigación: También se adoptó el diseño experimental con dos grupos experimentales y de control iguales con control estricto en las pruebas previas y posteriores. Los límites de esta comunidad de investigación están representados por estudiantes de cuarto grado de secundaria en Basora Girls' Middle School (2024-2025), cuyo número total es (90) estudiantes, distribuidos por naturaleza en 4 secciones. Las secciones (A-B) se determinaron por sorteo, de modo que la Sección (A) representa el grupo experimental y la Sección (B) representa el grupo de control. Se excluyeron los estudiantes insatisfechos y los que se ausentan con frecuencia de los dos grupos. (15) estudiantes fueron seleccionados aleatoriamente de cada sección, también por sorteo, de modo que la muestra total de la investigación alcanzó (30) estudiantes, lo que representa (33,3%) de esta comunidad. (15) estudiantes también fueron seleccionados de la Sección (C) para la muestra exploratoria, lo que representa (16.6%) de su comunidad original
Resultado: es claro que los estudiantes tanto del grupo experimental como del grupo de control aprendieron la habilidad de aplastar en los resultados de las pruebas posteriores que en los resultados de las pruebas previas.
Conclusiones: La estrategia de los dos polos del imán de luz se puede aplicar en el aprendizaje de la habilidad de golpear la pelota en voleibol para estudiantes de cuarto grado de secundaria.

Palabras clave

Estrategia de poste fotomagnético; habilidad de remate; voleibol.

Introduction

The scientific and technological progress that we see today in various areas of life is the result of experiences, experiments and research through which many results have been reached that have been put in the service of all humanity. This development has been reflected in the field of physical education and its various means. It has opened new horizons for researchers and students in the field of teaching methods to learn about what is new in the processes of acquiring information , as you see, (Badr Mohammed et al., 2025) sees that educational institutions are currently facing many variables that are characterized by change and complexity in addition to the lack of clarity and stability, which prompted researchers to search for everything new in the educational process from strategies and methods.

Many strategies have emerged, including the strategy of the two poles of the photomagnet, which is known as "one of the active learning strategies concerned with reading skills. Just as the magnet attracts metal materials, the strategy works on the same idea, where words or concepts attract other information and words in the text, according to what. (Ismail & Al-Zuhairi, 2022) sees that the teaching process is the cornerstone of The desired behavior of individuals to acquire knowledge, values, habits and other behavioral patterns. (Abbass Al-Sade & NajlaaAbbas, 2023) believes that building the personality of learners is done through a set of successful strategies that lead to achieving the desired goals that require regular and careful planning. The nature of teaching the accuracy of volleyball skills is characterized by interaction between the elements of the teaching process, as is the case with teaching the skills of other team games. In addition to activating all aspects in serving the learning process, especially the procedures and application of modern strategies in the learning process.

Perhaps the strategy of the two magnetic poles is one of the most important strategies that need to be explained and clarified by the teacher to the student before performing greatly so that the student can apply it correctly. This all depends on the positive role played by the teacher due to its effectiveness in the success of educational and teaching work , This is consistent with the opinion who believes that one of the indicators of teacher quality is the teacher's choice of a teaching strategy that achieves the lesson's objectives (Hamdan , 2018), and the view of teaching is defined as all the efforts made by the teacher to help the student achieve integrated growth according to his circumstances, readiness, and capabilities. (Abdul Hussein & Kazim, 2015) This is who believes that the role played by a faculty member in education in general is a very important role because it is one of the pillars of the educational process and is the key to knowledge and science for the student. (Saleem & Al-zuhairi, 2024), Teaching methods need to be diversified. In the mechanisms of its output in lessons, whether it is a practical or theoretical lesson, to make the learner more able to gain more information and more effective and participate in the lesson. The main goal of the magnet poles strategy is to link the main ideas together through one word, as well as to make students more able to extract the words around which the topic revolves, and thus understand the details of the skill and the general topic, in addition to enhancing the skill of cooperation and discussion between students. This is consistent with the opinion of (Saleem & Al-zuhairi, 2024), who see that it is necessary in physical education lessons to pay attention to diversification and integration between cooperative and individual learning within a single lesson. The magnet poles strategy is also one of the strategies that help students use scientific processes such as classifying information and main facts into secondary information and facts in an innovative way, as it can be used and employed during the lesson whenever required. (Jerri et al., 2024).

Its idea is based on drawing a diagram of a magnet so that a main piece of information is written on each of its poles, and each pole works to attract facts and ideas related to it from the group of information and facts attached in a random manner, which helps to raise the level of students' achievement (Ambusaidi, 2019).This is what makes it one of the distinctive strategies that attracts students' attention and attracts them to learning because it is completely different from other strategies in terms of the effective and exciting application mechanism that can be applied successfully if the teacher is able to explain it in an integrated manner to the students, as it is one of the active learning strategies, as the strategies in the methods of teaching physical education must be characterized by the possibility of applying them practically, and their selection must be improved in light of the determinants of their compatibility between the students, the teacher, and the curriculum, with the availability of various capabilities in the physical education lesson, taking into account the level of the students, their chronological age, and their academic stage, and taking into account the level of their skill performance

and what they have received from previous experiences, and the availability of material and human capabilities for application These strategies, in addition to the necessity and importance of defining the roles of both the student and the teacher in the lesson, and adopting an appropriate technology to activate the role of the students and help them to produce the skill performance to appear in a way that is free of common errors, in line with the trends of the modern school, and through adopting the clarity of the communication message between the students and the teacher. The most important advantages of teaching with this strategy are the following: Increasing students' ability to understand, build and receive knowledge to be meaningful, providing students with knowledge, information, skills and the ability to solve problems and apply them in the educational environment, providing students with communication and cooperation skills among themselves and with others, and developing students' internal motivation to excite them to learn (Sebastian, 2024)

Also, teaching that results in improving skill performance depends on the continuity of updating its strategies by delving into experimenting with its modernity, to seek to achieve more than one purpose in one work by investing all its positives in supporting the student's role to determine the tasks required of her in knowing the details of the applied performance of the volleyball spiking skill, and this is consistent with the opinion of (Badr Mohammed et al., 2025), which indicates that the use of effective contemporary teaching strategies and techniques encourages interaction and enthusiasm among students and helps them to recognize different behavioral patterns and helps them to learn and express their opinions

Through the orientation of the two researchers in Physical education teaching methods, and from their direct knowledge of the methods used in teaching volleyball skills to female students at the preparatory stage level, they noticed a clear weakness in the level of skill learning for spiking, which prompted them to try the strategy of the two magnet poles as an attempt to contribute to supporting the teaching process in physical education in a way that helps female students improve their volleyball spiking skill, and then overcome this weakness in them, taking into account the privacy of the female students in the research sample and their level. The research objective: Preparing educational units for the magnet poles strategy in learning the spiking skill in volleyball, and identifying the effect of the magnet poles strategy in learning the spiking skill in volleyball for female students. The research hypotheses: There are no statistically significant differences between the results of the pre- and post-tests of the volleyball spiking skill for the experimental and control research groups, and there are no statistically significant differences between the results of the post-tests of the volleyball spiking skill between the experimental and control research groups.

Method

Research methodology:

According to the researchers mentioned in the current research problem, the experimental research method was adopted, which is defined as “the method in which we treat and control an independent variable to see its effect on a dependent variable, while observing the resulting changes and interpreting them, whether the experiment included an independent variable and a dependent variable or more than one independent variable or more than one independent variable” (Al-Mahdi, 2019). The experimental design with two equal experimental and control groups with tight control was also adopted in the pre- and post-tests.

Community and sample research:

The boundaries of this research community are represented by fourth-grade middle school students at Basra Girls' Middle School (2024-2025), whose total number is (90) students, distributed by nature into 4 sections. Sections (A-B) were determined by lottery, so that Section (A) represents the experimental group and Section (B) represents the control group. Unsatisfied students and those who are frequently absent from the two groups were excluded. (15) students were randomly selected from each section, also by lottery, so that the total research sample reached (30) students, representing (33.3%) of this community. (15) students were also selected from Section (C) for the exploratory sample, representing (16.6%) of their original community. Measurement and procedures:

The researchers adopted the volleyball spiking skill test under study (Jabbar , and et al. ,2020) (Appendix 1), and then prepared educational units for the strategy of the two poles of the photomagnet in practical volleyball lessons by focusing on applying its vocabulary in the main section of these educational units, as most of the steps of the strategy can be consistent with the nature of learning the volleyball spiking skill in the physical education lesson in terms of receiving knowledge, applying performance, and classifying information and facts. This strategy combines linking subsidiary information to the main idea by describing the linking process with the idea of magnetic attraction and repulsion. The strategy is implemented in the physical education lesson for skill learning of the volleyball spiking skill according to the following steps:

1- The researchers designed a model in the form of a magnet with two poles, one red and the other blue. This model was distinguished by being designed in a hollow shape so that the researchers placed colored lighting fixtures inside it that reflect the red color in the red pole and the blue color in the blue pole.

2- The researchers used equal cardboard pieces of Where the size and different colors were used to write some details of the skill under study

3- The red pole indicated the performance technique

4- The blue pole indicated the common errors

5- As for the colored cardboard pieces, the information was distributed on them in a different way, so that some of them carry the details of the performance technique and others carry the details of the common errors. They were placed randomly around the magnet

6- The mechanism of work in this strategy requires dividing the students into cooperative groups to identify the correct answer

7- The researchers explained and presented the skill to the students, accompanied by the use of the magnet model. The researchers also wrote the main information and facts in the lesson topic, which is the skill of crushing the volleyball, which represents the attractive words on each of these poles

8- The researchers worked on writing and attaching the sub-information related to the red pole and some others related to the blue pole, in addition to a group of information that is not related to either pole randomly

9- The students should write the information they have created about the two main terms, performance technique and common errors, by the idea of attracting the main information to the terms The sub-information was on cards distributed by the researchers to each group to record their choices.

The school's role is to guide and closely monitor educational situations, and encourage student groups to adopt positive behaviors, between groups and between students, by following up on the improvements that occur to them in the lesson. As for the exploratory experiment, the researchers applied the exploratory experiment on (15) female students, who are the determinants of the procedures of this experiment. The purpose of this experiment was to know the obstacles that the researchers might face when implementing the main experiment, including the requirements for verifying the implementation time of the test and the educational units in the lessons. They did not face any significant difficulty. According to the determinants of the experimental design of the current research, the pre-tests for the volleyball spiking skill tests were applied to the requests of both research groups (experimental and control) in order to ensure the starting line for their equivalence in the results of the volleyball spiking skill tests. Then, the vocabulary of the aforementioned magnet pole strategy was applied to the students of the experimental group. As for the students of the control group, they will be satisfied with the methods followed with them in the lesson. The lesson included the following time plan: Total time for the lesson: (45) minutes divided into the preparatory section (10) minutes, the main section (25) minutes, the educational side (10) minutes, the applied (15) minutes, and the final section of Lesson (10) minutes.

- The educational aspect, which lasts (10) minutes, will be implemented by applying the (photomagnetic poles) strategy according to the previously mentioned specifications.

- The practical side, which lasts for (15) minutes, will include practical exercises on the skill of hitting the volleyball at the same level for all students in the two groups. These exercises will be graded and sequential from easy to difficult, as the skill, sections will be presented according to the tasks, deliberations, and exchange of feedback between the students.

The practical lessons were applied at a rate of one unit per week for a period of (4) consecutive week and total of (4) educational units, in order to reach learning the skill of hitting the volleyball. After completing this experiment, the post-tests were applied, and the results of the study were processed using the Social Statistical Package (SPSS) version (V28), (statistical package for social sciences) to automatically calculate each, the arithmetic mean, the standard deviation, and the (t-test) test for unrelated samples, and the (t-test) test for related samples.

Findings

Referring to the results in (table 2), it is clear that the students of both the experimental and control groups all learned the skill of crushing in the results of the post-tests than they were in the results of the pre-tests. Referring to the post-test results in (table 3), it is clear that the students of the experimental group outperformed the students of the control group in increasing learning. The researchers attribute the emergence of these results among the students of the experimental group to the positive impact achieved by the strategy of the two poles of the light magnet in the practical physical education lessons in volleyball, through which each learner derived knowledge of the skill performance to achieve learning the skill of crushing, as the use of the colored model and the use of light lighting during the learning process helped the learners to focus their attention on the information presented and also to fix it in them, which helped the learners to delve into the details of the skill performance and how to practice it correctly with repetitions the process of dividing students into groups to encourage learners to question and inquire, and allowing them to move and interact collectively in managing a discussion circle between group members about the skill of spiking in volleyball and helping the student monitor her colleague and correct her mistakes, in addition to her benefiting from that correction in reconstructing a clear and integrated vision of the skill to achieve the best learning and according to the specificity of the skill of spiking, which is fast in nature. The learning process according to the strategy of the two magnet poles also required creating a classroom atmosphere in which self-confidence and mutual trust prevail, and the ability to discuss and exchange opinions between students.

This is consistent with the opinion of (Shaalan, Aboode, & Radhi, 2022), who believes that using such strategies ensures that students are not passive learners, but rather productive learners within their groups through active participation in learning with their colleagues and encouraging each other. These requirements, in combination with the actual application of educational exercises and the number of times they are performed in each lesson, helped to show the result of skill learning at this level, given that the learning process is affected by By increasing repetitions and knowledge of the precise movements of the performance necessary to achieve it in the best possible way, it is noted that there is a big difference between beginners and experts when performing any apparent behavior, as the beginner needs to organize the appropriate and appropriate nervous impulse and it must be known that repetition (number of times performed) alone is not sufficient for the required learning process to occur, as the process depends on observation "In addition to what all learning processes need to link new information with what is stored in memory, and this is what modern strategies provide, including the strategy under study, and this is consistent with the opinion of who believes that modern strategies help the learner achieve the goal he aspires to, as they include a set of activities represented in selecting and organizing information, repeating and reconnecting new learning with learning stored in memory, as well as providing the strategy of the two poles of the magnet and as a result of discussions with colleagues in the same group, and thus making a decision about the correct answers, this enhances their ability to make decisions, and this is consistent with the opinion of , who believes that the decision-making process is a process of choosing from among a group of alternatives to reach a specific result in a specific situation and time, and that making the right decisions in the volleyball game is one of the most important aspects that the player enjoys. This strategy is also one of the modern strategies that work to make the learner the focus of the educational process and take him out of being a mere recipient of information.

The learner recalls information from his memory, trying to link it to the new information presented to him. This strategy also encourages the activation of thinking processes from classifying information and choosing the most appropriate and correct of them and fixing it. This is consistent with the opinion of (Atiya, 2016), who believes that "the educational environment, with its influential elements in learning outcomes, has a major role in the learner's activity and positive interaction with educational situations and their elements. One of the most prominent features of this environment is that it is rich in diverse sources of information, includes opportunities to ask questions and clarify, and a spirit of cooperation and positive participation in work prevails in it, and self-confidence and mutual trust prevail, openness to the opinions of others and acceptance of other points of view, and is saturated with vitality and activity, and the suitability of its elements(Jerri et al.,2024) The physical requirements of active group work, and include the necessary tools and equipment required for active learning, and include opportunities for various options and alternatives of activities and tools

Table 1. shows the results of the pre-tests between the two research groups.

Test Unit of Measure	Groups		Arithmetic mean	Standard deviation	Levene	(Sig)	(t)	(Sig)	Type	Sig
Spiking Skill (degree)	Experimental	15	13.07	3.218	0.384	0.541	0.961	0.345	Non	sig
	Control	15	14.13	2.85						

Not significant: ≤ (Sig)(0.05) at a significance level of (0.05) and a degree of freedom (n1 + n(2-2)) = 28

Table 2. shows the results of the pre- and post-tests for the experimental and control groups

Test Unit of Measure	Groups	tests	Arithmetic mean	Standard deviation	standard deviation of differences	arithmetic mean of difference	(t)	(Sig)	Type	Sig
Spiking Skill (degree)	Experimental	pre	13.07	3.218	13.067	3.283	15.413	0.000	sig	
		post	26.13	0.99						
	Control	pre	14.13	2.85	6.6	4.205	6.078	0.000	sig	
		post	20.73	1.87						

(15) For each group, significance: (Sig) ≥ (0.05) at a significance level of (0.05) and a degree of freedom of (n) - (1).

(15) For each group, significance: (Sig) ≥ (0.05) at a significance level of (0.05) and a degree of freedom of (n) - (1).

Table 3. shows the results of the post-tests between the two research groups

Test Unit of Measure	Groups		Arithmetic mean	Standard deviation	(t)	(Sig)	Type	Sig
Spiking Skill (degree)	Experimental	15	26.13	0.99	9.885	0.000	Sig	
	Control	15	20.73	1.87				

Not significant if ≤ (Sig) (0.05) at a significance level of (0.05) and a degree of freedom (n1 + n2)-2 = 28

Conclusions

- The strategy of the two poles of the light magnet can be applied in learning the skill of hitting the ball in volleyball for fourth-grade middle school students.

- The application of the strategy of the two poles of the light magnet in practical physical education lessons in volleyball helps in learning the skill of hitting the ball in volleyball for female students, and with superiority over learning it for female students who learn without it.

Recommendations:

- It is necessary to pay attention to using new strategies that work to attract students' attention during the lesson, such as the strategy of the two poles of the magnet, as it is more interesting and exciting, which enhances the learning process in practical physical education lessons in volleyball.

- It is very important to apply the strategy of the two poles of the magnet when learning other skills in volleyball or in other sports activities

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Authors' and translators' details:

Heba Abd Alrahman Azez	Heba.Abd2304m@copew.uobaghdad.edu.iq	Author
Najlaa Abbas Al-Zuhairi	najlaa@copew.uobaghdad.edu.iq	Author

Appendix

shows the spiking test in the diagonal and straight directions. (Jabbar, M. K. and et al.,2020)
The aim of the test: to measure the skill of spiking in the diagonal and straight directions.
Tools: (10) volleyballs, a volleyball court, two mattresses placed in a planned area measuring (3 x 3) as shown in Figure (1).
Performance specifications: spiking from center (4), prepared by the teacher from center (3) and the tested student must perform (5) spiking towards the diagonal direction) (the mattress located in center (5)).
(5) Other spiking towards the straight direction (the mattress located in center 1) taking into account taking a rest period between one attempt and another.
Recording:

- (4) points for each correct spiking in which the ball falls on the mattress.
- (3) points for each correct spiking in which the ball falls in the planned area.
- (2) points for each correct spiking in one of the two areas (A) and (B).

Maximum score: (40) points.