

The impact of a proposed educational program using reciprocal learning and guided discovery methods on the learning of certain basic volleyball skills for secondary school students (aged 15-18)

اثر برنامج تعليمي مقترح باستخدام اسلوبي التعلم التبادلي والاكتشاف الموجه على تعلم بعض المهارات الاساسية في الكرة الطائرة لتلاميذ التعليم الثانوي (15- 18 سنة)

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Abstract : This study aimed to identify the impact of using a proposed educational program employing two learning methods (interactive and guided discovery) on the learning of some basic volleyball skills (serving, receiving, and setting) among secondary school students. It also aimed to identify the relative effectiveness of the two methods (guided discovery and reciprocal) on the learning of basic volleyball skills. Our research was based on an experimental approach, with two experimental groups, the first and the second. The study was conducted on a sample of 16 students who were selected intentionally from the final year students at Abdel Rahman Al-Disi High School in Bou Saada. The statistical results showed that the proposed program (interchangeable, guided discovery) had a positive effect on learning some basic volleyball skills and that the guided discovery method had a greater positive effect than the interchangeable method on the skill of aiming in volleyball.

Keywords: Teaching methods, Guided discovery method, Interactive teaching method

المخلص : هدفت هذه الدراسة إلى التعرف على أثر استخدام برنامج تعليمي مقترح باستخدام اسلوبي التعلم (التبادلي والاكتشاف الموجه) على تعلم بعض المهارات الأساسية في الكرة الطائرة (مهارة الارسال ، مهارة الاستقبال ، مهارة الاعداد) لدى تلاميذ التعليم الثانوي. وكذلك التعرف على افضلية التأثير بين الاسلوبين (الاكتشاف الموجه والتبادلي) على تعلم المهارات الأساسية في الكرة الطائرة ، وقد اعتمدنا في بحثنا على المنهج التجريبي بتصميم مجموعتين تجريبيتين اولى وثانية ، وأجريت الدراسة على عينة مكونة من 16 تلميذاً تم اختيارهم بطريقة قصدية ، من تلاميذ

الأقسام النهائية بثانوية عبد الرحمن الديسي ببوسعادة. ولقد توصلت النتائج الإحصائية وجود اثر ايجابي باستخدام البرنامج المقترح (التبادلي ، الاكتشاف الموجه) على تعلم بعض المهارات الاساسية في الكرة الطائرة وان اسلوب الاكتشاف الموجه له تأثير ايجابي اكبر من اسلوب التبادلي في مهارة التصويب في الكرة الطائرة .
الكلمات المفتاحية : أساليب التدريس ، أسلوب الاكتشاف الموجه ، أسلوب التدريس التبادلي

1-Introduction and problem statement:

Many studies and research projects in the field of education have shown the need to view students as requiring integrated growth in all cognitive, emotional, mental, spiritual, and physical aspects, as they are capable of thinking, critiquing, constructing, and participating in various decisions related to the educational learning process. This has been adopted by recent studies

, which make students active and essential participants in the educational process and effective partners in all stages of the educational process, starting with the pre-lesson stage (planning), during the lesson (performance), and after the lesson (evaluation). Thus, the student's role is not limited to receiving and implementing information, i.e., rote learning, but rather they are considered an active partner in the modern educational process. and teaching methods are processes through which information, situations, and educational experiences are organized and presented to the student, who interacts with them to achieve the lesson objectives.

This is known as Muska Mustan's "spectrum of teaching methods theory" which came as a practical critique of traditional teaching methods (Abu Rashid and Al-Sabr, 1426 AH, p 10).

With the development of modern concepts and the proliferation of effective methods in modern teaching, the term "teaching" has emerged in its contemporary sense, which we can define as a comprehensive, purposeful educational process that takes into account all the factors that constitute learning and education. In this process, teachers, students, school administrators, classrooms, families, and society all cooperate to achieve what is known as education. Teaching is also a process of social interaction that uses the mind, senses, emotions, and language as its means (Abu Samour, 2015, p 9).

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Teaching style is defined as the teaching method preferred by a teacher and can be defined as the way in which the teacher approaches teaching during the teaching process, or the method used by the teacher to employ teaching methods effectively. distinguishing them from other teachers who use the same method. Teaching style is therefore fundamentally linked to the teacher's personality traits (Shabr et al. 2014. p 25-26).

Despite the multitude and diversity of modern teaching methods, ranging from indirect to direct teaching methods in learning various basic motor skills, there remain differences from one teacher to another and from one educational situation to another. depending on the educational situation, motor skill, environment, educational need, and objective. Among these modern pedagogical methods used in teaching physical education and sports under the competency-based approach, we find the method of (reciprocal learning) and guided discovery. Guided discovery is an indirect method in which the teacher presents multiple alternatives for movements and gives the student the opportunity to try them all so that they can determine the best one (Rashid et al. 2005. p 70).

Wali (2002) also points out that the guided discovery method is an indirect method in the educational process, in which the teacher presents stimuli, followed by responses from the learner using certain mental processes and previous experiences to arrive at the correct answer (Wali. 2006. p 14).

As for the interactive method, it is considered a direct method. Rashid Ibn Abdulaziz (2005) believes that what distinguishes this method is the spirit of cooperation among students, which is equivalent to providing a teacher for each student (Rashid et al. 2005. p 35).

What distinguishes the reciprocal method is that it relies mainly on a standard sheet specific to the skill performance model and the pairing of the performing learner with the observing learner, where the latter plays a role in providing immediate and direct feedback to their partner, after which they switch roles.

Physical education and sports, as one of the teaching subjects, do not deviate from this conceptual framework of teaching, given their multiple objectives and rich content that seeks to

develop and enhance the various aspects of the learner, taking into account the characteristics of their age group, needs, and desires. This is achieved by providing various types of physical activities included in the curriculum, which have been selected with the aim of achieving these objectives through individual and group activities. Among these activities is volleyball, which has undergone significant development and maintained its position as one of the most practiced and widespread sports around the world due to its basic skills that bring about continuous change in the learner's behavior using different teaching methods (Fertas, 2022, p 776).

Based on the above, we pose the general question, which is the research question:

2-1 - General question:

Does the proposed educational program have an impact on improving the performance level of certain basic skills (receiving, setting, serving) in volleyball among high school students (15-18 years old)? Based on the general question, we pose the following specific questions:

3-1 - Specific questions:

- Are there statistically significant differences between pre-test and post-test scores in the performance of certain basic skills (receiving, setting, serving) in volleyball, after applying the educational program based on guided discovery learning, in favor of the post-test?
- Are there statistically significant differences between pre-test and post-test scores in the performance of certain basic skills (receiving, setting, serving) in volleyball, after implementing a teaching program based on reciprocal learning, in favor of the post-test scores?
- Are there statistically significant differences between the two experimental groups in terms of their performance in certain basic volleyball skills (receiving, setting, and serving) that can be attributed to the different learning styles used in the proposed educational program?

2- Study hypotheses:

Based on the general question and specific questions, the hypotheses were formulated as follows:

2-1 General hypothesis:

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Does the proposed educational program, based on guided discovery and interactive learning methods, improve the performance of certain basic volleyball skills (receiving, setting, and serving) among secondary school students (aged 15–18).

2-2 - Specific hypotheses:

- There are statistically significant differences between pre-test and post-test scores in the performance of some basic skills (receiving, setting, serving) in volleyball, after applying the proposed educational program based on guided discovery learning, in favor of the post-test.
- There are statistically significant differences between pre-test and post-test scores in the performance of some basic skills (receiving, setting, serving) in volleyball, after applying the proposed educational program based on the reciprocal learning method, in favor of the post-test.
- There are statistically significant differences between the two experimental groups in terms of their performance in certain basic volleyball skills (receiving, setting, and serving), which can be attributed to the different learning methods used in the proposed educational program.

2-3 Study objectives: -Identify the impact of guided discovery on learning basic volleyball skills (receiving, setting, serving)

-Identify the impact of reciprocal learning on learning basic volleyball skills (receiving, setting, serving)

-Identify the relative effectiveness of the guided discovery and reciprocal learning methods in teaching basic volleyball skills (receiving, setting, serving).

2-4 Study terms:

2-4-1 Teaching methods:

Definition: These are the actual means of communicating the learning message, whether the content of this message is cognitive, skill-based, or psychological, and teaching methods are specific to the teacher (Homs, 2017, p 28).

Procedurally: These are the teacher's preferred teaching styles, which are linked to their personality and constitute a set of procedures that take place in a specific educational situation.

2-4-2 Guided discovery method:

Definition: This is an indirect teaching method that relies on the teacher guiding their students to engage in the learning process by asking a series of questions in the right direction for motor performance, using certain mental processes and previous experiences (Al-Hashoush, 2012, p 41).

Procedurally: It is an indirect teaching method based on the teacher's assistance to the student, making the teacher an assistant and guide and the student a thinker, experimenter, and discussant until he or she arrives at the solution and makes a decision.

2-4-3 Reciprocal teaching method:

Terminology: This is a method that allows the teacher to make more decisions, which are mainly related to assessment, in order to provide direct feedback. This method requires students to be organized in pairs to work together reciprocally, one of whom performs the required skill while the other observes and makes assessment decisions based on their observations and provides feedback to the performer. (Al-Hashoush, 2012, p 34).

Procedure: This is a direct teaching method that involves organizing students into pairs who exchange roles with each other, with one performing the movement and the other observing, evaluating, and providing immediate feedback to their partner.

3-Previous and similar studies:

3-1 A study by Boumaza Mohamed Lamine (2021) entitled: A study of the effect of reciprocal and training teaching methods on some basic handball skills (passing, dribbling, shooting) among secondary school students.

The study aimed to examine the impact of reciprocal and training teaching methods on certain basic handball skills (passing, dribbling, shooting) among secondary school students. The researcher used an experimental approach with two samples. The sample consisted of 16 students who were selected intentionally. One of the most important findings was that both instructional and reciprocal teaching methods had a positive effect on some basic handball skills among secondary school students, and that the instructional method was better than the

reciprocal method in teaching shooting skills in handball among secondary school students. (Boumaaza 2021, p 895-906).

3-2 A study by Ben Mustafa Ismail (2025) entitled: The effectiveness of a proposed experimental program applying the guided discovery method on improving mental skills during physical education and sports activities among secondary school students.

The study aimed to apply a proposed program that includes guided discovery as an independent variable in teaching physical education and sports activities in order to determine its effectiveness in improving the mental skills of the research sample. The researcher used an experimental approach on a sample of 17 male students who were selected randomly.

The results of the study were as follows: there were statistically significant differences between the pre-test and post-test measurements for most of the targeted mental skills in favor of the post-test, with improvements in the following skills: self-confidence, coping with anxiety, imagination (mental images), mental readiness, ability to concentrate, ability to relax, and motivation (Ben Mustafa 2025, p426-445).

3-3 A study by Rafid Al-Daoud (2015) entitled: The effect of using guided discovery and interactive learning methods in learning certain types of shooting in basketball.

The study aimed to determine the effect of using guided discovery and reciprocal learning methods in teaching certain types of basketball shooting techniques. The experimental method was applied to two experimental groups and a control group consisting of a sample of 45 students. The program was implemented at a rate of two 90-minute sessions per week. Finally, it was concluded that guided discovery and interactive learning methods have a direct effect on learning certain types of basketball shooting, and that the guided discovery method is better than the interactive method and the method used in learning the skills of jump shooting and layup shooting (Rafed Ali Daoud, 2015, 130–139).

4- Methodological procedures followed in the study:

4-1 Research methodology: The researcher used an experimental methodology with a balanced group design, following pre- and post-measurements for each

of the two groups (teaching with the guided discovery method and teaching with the reciprocal method) due to its suitability and the nature of the study.

4-2 Study variables:

- **Independent variable:** The proposed educational program based on teaching methods (guided discovery, interactive).

- **Dependent variable:** Certain basic volleyball skills (serving, receiving, setting).

4-3- Study population and sample:

4-3-1 Study population: The original study population consists of male students in their final year of secondary school, who are studying at the Abdelrahman Al-Disse Secondary School in the city of Bou Saada for the academic year (2024-2025), numbering 95 students.

4-3-2 Study sample: The study sample was selected randomly by drawing lots and consisted of 16 students, who were divided into two equal groups (eight students in each group). The first experimental group was taught using the reciprocal teaching method, and the second experimental group was taught using the guided discovery method.

Research sample: The research sample included 16 male students from a community of 95 students, selected intentionally.

4-3-3- Research areas:

- Spatial area: Abdel Rahman Al-Deis Secondary School - Bou Saada -

- Temporal domain: The experiment was conducted during the period from October 3\ 2024\ to November 28\ 2025.

Research tools: - Sources and references in Arabic and foreign languages - Pedagogical methods - Observation - Skill tests - Statistical tools.

4-3-2-1- Study sample equivalence:

In order to obtain a balanced sample, we homogenized the sample individuals in terms of variables that could have an impact on the study results, namely: certain growth rates (weight, height, age) and performance level in basic volleyball skills (serving, receiving, setting).

Table No (01) shows the equivalence of the sample according to variables (weight, height, age)

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Variables studied	Interchangeable style set		Guided Discovery Group		Calculated value (T)	Statistical significance
	Arithmetic mean	Standard déviation	Arithmetic mean	Standard déviation		
Weight (kg)	64.9	1.70	64.77	1.98	1.50	Not statistically significant
Lenthe (mètres)	171	2.73	172	2.58	1.36	Not statistically significant
Age (years)	17.20	1.04	17.16	1.60	0.53	Not statistically significant

Source: Prepared by the researcher

Discussion of table results: Table 1 shows that the study sample is balanced in terms of weight, height, and age, with similar averages for both experimental groups (guided discovery method group and reciprocal method group).

The t-test values between the two measurements for the variables (weight, height, age) were as follows: (1.72) for the weight variable, (1.79) for the height variable, and (0.40) for the age variable. The calculated significance values were (0.9) .

(0.8), and (0.6), respectively, which are greater than the significance level (0.05), indicating that there are no statistically significant differences between the two measurements. We therefore conclude that the two experimental groups are equivalent in terms of growth rates.

Table No. (02) represents the equivalence of the study sample individuals according to the variable of basic skills in volleyball (serving, receiving, setting)

Variables studied	Interchangeable style set		Guided Discovery Group		Calculated value (T)	Statistical significance
	Arithmetic mean	Standard déviation	Arithmetic mean	Standard déviation		
Serving	15.32	2.65	15	2.90	0.41	Not statistically significant
Reception	29.07	1,98	28.13	2.12	0.69	Not statistically significant
Preparation	10.16	1.09	10.70	1.54	0.32	Not statistically significant

Source: Prepared by the researcher

The results in Table 2 show that the sample individuals were equivalent in terms of basic volleyball skills (serving, receiving, preparation), where the arithmetic mean results were close for both experimental groups (guided discovery method group and reciprocal teaching method group), where the t-test value between the two measures for the basic skills under study for the variables (serving, receiving, preparation) as follows: (0.84) for the sending skill variable, (0.48) for the receiving skill variable, and (0.15) for the preparation variable. The calculated significance values were (0.40) (0.63), and (0.88), respectively, which are greater than the significance level (0.05), indicating that there are no statistically significant differences between the two measures. We therefore conclude that the two experimental groups are equivalent in terms of basic volleyball skills.

- **Description of the two proposed educational programs:**

We prepared a set of educational units to apply the proposed program to the first experimental group (teaching using the guided discovery method) and the second

experimental group (teaching using the reciprocal method). We then evaluated the program through a group of teachers who have experience in teaching modern learning methods and strategies. Then we implemented the two programs with the help of specialized professors. Each class lasted 60 minutes and was divided into a preparatory part, a main part, and a concluding part.

There were nine sessions, and the content of the sessions was a combination of pre-prepared exercises, taking into account their duration and number of repetitions, and varied between the basic skills of volleyball under study (serving, receiving, setting).

• Tests used in the pre- and post-tests for the two experimental groups:

First test: Serving skill measurement test:

Scoring: For each correct serve, the player is awarded points based on the area where the ball lands in the marked half of the court. Each player has 10 attempts, and points are awarded on a scale of 1 to 4, with a maximum score of 40 points for this test.

Second test: Receiving skill test:

Scoring: The test taker is awarded points for their 20 attempts (10 attempts from each circle), with a maximum score of 60 points.

The third test is a test of preparation skills:

Scoring: The number of balls that the player passes to the wall with precision in 30 seconds is counted (Hassanin and Abdel Moneim, 1998, p163, 166, 241).

5- Presentation and discussion of study results:

5-1- Presentation and analysis of the results of the first hypothesis: There are statistically significant differences between the pre-test and post-test in the improvement of some basic skills (receiving, setting, serving) in volleyball using the guided discovery method in favor of the post-test.

The following table shows the results of the first experimental group (teaching using the reciprocal method)

Study variables	Tests	Arithmetic mean	Coefficient of variation	T Calculated	T Scheduled	Degree of freedom	Level of statistical significance	Statistical significance
Serving	Pre-test	9.63	9.23	8.06	3.46	7	0.01	Statistically significant
	Post-test	15.25	7.5					
Reception	Pre-test	39.3	18.89	8.45	3.46	7	0.01	Statistically significant
	Post-test	50.60	11.43					
Preparation	Pre-test	11.02	4.55	8.65	3.46	7	0.01	Statistically significant
	Post-test	19.23	5.98					

Source: Prepared by the researcher

Analysis of table results:

For the first variable: volleyball serving skill test:

The calculated t-value was 8.06, which is greater than the tabulated t-value (3.46) at a significance level of 0.01 and a degree of freedom of 07. We can therefore say that there are statistically significant differences between the pre-test and post-test results for the volleyball serving skill test in favor of the post-test.

For the second variable: volleyball receiving test:

The calculated t-value was 8.45, which is greater than the tabulated t-value (3.46). At a significance level of 0.01 and a degree of freedom of 07, we can say that there are statistically

significant differences between the pre-test and post-test results for the volleyball receiving skill test in favor of the post-test.

For the third variable: volleyball setting skill test:

The calculated t-value is 8.65, which is greater than the tabulated t-value (3.46). At a significance level of 0.01 and a degree of freedom of 07, we can say that there are statistically significant differences between the pre-test and post-test results for the volleyball setting skill test in favor of the post-test.

Discussion of the first hypothesis: There are statistically significant differences between the pre-test and post-test in the improvement of some basic skills (receiving, setting, serving) in volleyball using the guided discovery method in favor of the post-test.

Post-test.

Through the results of our study in Tables 3, we found statistically significant differences between the pre-test and post-test scores of the first experimental group that was taught using the reciprocal teaching method. This is because the reciprocal method is based on interaction between students, as it works to increase motivation to learn and encourage students to correct their classmates' mistakes during motor performance and minimize them. This is confirmed by Abbas Ahmed Saleh and Abdul Karim Mahmoud (1991). The reciprocal method relies on providing accurate and immediate feedback and immediate feedback to the student to create a direct psychological and social atmosphere where the observer monitors the other student and gives him feedback, with the observing student using the data sheet to provide feedback correctly. Abbas Ahmed Saleh et al. 1991, p 97).

Afaf Abdul Karim (2005) believes that this reciprocal method enhances the development of various physical, social, and emotional concepts in the student's life, and that each group has the right to choose the place where they want to apply the skills and the speed required to perform each skill, as the teacher's relationship with the student is indirect. (Afaf Abdel Karim, 2005, p 118)

Through our research, we see that this method gives the learner freedom, allowing them to focus their physical and mental efforts on learning various skills with great effectiveness, as they determine the best ways to achieve the desired goal. This is the aim of choosing a method that motivates the learner towards the required motor performance, thereby producing the results of motor learning.

The results of our study are consistent with the study by Belkada Houari et al. 2024, which found that the use of the reciprocal method had a positive effect on the learning of skills (serving, receiving, and passing) in volleyball among the research sample. There were acceptable rates of progress in the results of the research samples, with the experimental sample performing better than the control sample, which relied on the American method (Belkada Houari, 2024, p 184).

Based on all of this, we can say that the first research hypothesis has been proven.

5-1- Presentation and analysis of the results of the second hypothesis: There are statistically significant differences between the pre-test and post-test in the improvement of some basic skills (receiving, setting, and serving) in volleyball using the guided discovery method in favor of the post-test.

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The following table shows the results of the second experimental group (guided discovery teaching)

Study variable s	Tests	Arithmetic mean	Coefficient of variation	T Calculated	T Scheduled	Degree of freedom	Level of statistical significance	Statistical significance
Serving	Pre-test	9.23	8.19	4.55	3.46	7	0.01	Statistically significant
	Post-test	16.76	7.66					
Reception	Pre-test	37	15,8	7.03	3.46	7	0.01	Statistically significant
	Post-test	49.01	11.79					
Preparation	Pre-test	12.91	3.13	10.11	3.46	7	0.01	Statistically significant
	Post-test	23.06	9.36					

Source: Prepared by the researcher

For the first variable: testing volleyball serving skills:

The calculated t-value was 4.55, which is greater than the tabulated t-value (3.46) at a significance level of 0.01 and a degree of freedom of 07. We can therefore say that there are statistically significant differences between the pre-test and post-test results for the volleyball serving skill test in favor of the post-test.

For the second variable: volleyball receiving test:

The calculated t-value was 7.07, which is greater than the tabulated t-value (3.46) at a significance level of 0.01 and a degree of freedom of 07. We can therefore say that there are statistically significant differences between the pre-test and post-test results for the volleyball receiving skill test in favor of the post-test.

For the third variable: volleyball setting skill test:

The calculated t-value was (10.11) which is greater than the tabulated t-value (3.46). At a significance level of 0.01 and a degree of freedom of 07, we can say that there are statistically significant differences between the pre-test and post-test results for the volleyball setting skill test in favor of the post-test.

Discussion of the second research hypothesis: The second research hypothesis indicates that there are statistically significant differences between pre-test and post-test scores in the improvement of some basic skills (receiving, setting, serving) in volleyball using the reciprocal method, with post-test scores being higher than pre-test scores.

Through the research results we reached in our study in Table No. (03), where we found statistically significant differences between the pre-test and post-test in the first experimental group that was taught using the (reciprocal)

Through the research results we reached in our study in Table No. (04), we found that there were statistically significant differences between the pre-test and post-test in the second experimental group that was taught using the (guided discovery) method.

The researchers believe that the guided discovery method relies on a type of intellectual interaction between the student and the teacher, where the teacher asks the student a series of questions, which are met with a motor response from the student, i.e. each question from the teacher elicits a single response from the student

- A series of consecutive questions from the teacher elicits a series of responses from the student, ultimately leading to a response that expresses the discovery of the final motor goal.

- This requires the teacher to prepare a set of questions before the start of the lesson, so that there is a sequence of questions that leads to the achievement of the final goal. (Mustafa Al-Sayeh Muhammad ,2002, p 32).

The results of our study are consistent with those of Ben Yub Abdelali et al. (2020), in which the researchers concluded that the use of self-review and guided discovery methods has a particular impact on learning the skill of shooting in basketball, and that the method has a greater effect on learning the skill of scoring from movement in basketball than the guided discovery method.

From this, we can say that the second research hypothesis has been proven.

Presentation and analysis of the results of the third hypothesis: There are statistically significant differences between the two experimental groups in improving some basic skills (receiving, setting, and serving) in volleyball.

Study variables	Groups	Arithmetic mean	Coefficient of variation	T Calculated	T Scheduled	Degree of freedom	Level of statistical significance	Statistical significance
Serving	The first experimental group	15.25	7.5	0.81	2.93	14	0.01	Not statistically significant
	The second experimental group	16.76	7.66					
Reception	The first experimental group	50.60	11.43	3.22	2.93	14	0.01	Statistically significant
	The second experimental group	49.01	11.79					
Preparation	The first experimental group	19.23	5.98	5.04	2.93	14	0.01	Statistically significant
	The second experimental group	23.06	9.36					

Source: Prepared by the researcher

For the first variable: testing volleyball serving skills:

The calculated t-value was 0.81, which is lower than the tabulated t-value (2.97) at a significance level of 0.01 and a degree of freedom of 14. We can therefore say that there are no statistically significant differences between the results of experimental group 01 (alternative method) and experimental group 02 (guided discovery) in the post-test.

For the second variable: volleyball receiving skill test:

The calculated t-value was 3.22, which is greater than the tabulated t-value (2.97) At a significance level of 0.01 and a degree of freedom of 14, we can say that there are statistically significant differences between the results of experimental group 01 (interactive method) and experimental group 02 (guided discovery method) in the post-test in favor of the second experimental group (guided discovery method).

For the third variable: volleyball preparation test: The calculated t-value was 5.04, which is greater than the tabulated t-value (2.97) at a significance level of 0.01 and a degree of freedom of 14. We can therefore say that there are statistically significant differences between the results of experimental group 01 (alternative method) and experimental group 02 (guided discovery method) in the dimensional test in favor of experimental group 02 (guided discovery method).

Discussion of the third research hypothesis: The third research hypothesis indicates that there are statistically significant differences between the post-test scores of the two experimental groups in improving some basic skills (receiving, setting, and serving) in volleyball.

Based on the results of our study, shown in Table 5, which indicated that there were no differences in learning the skill of serving in volleyball between the two methods (interchangeable and guided discovery), while there were differences between the two teaching methods (interchangeable and guided discovery) in both receiving and setting skills in volleyball in favor of the guided discovery method. The researchers believe that the training method is based on learning, repetition, and consolidation of the skill, with sufficient time allocated for this. The serving skill is one of the important skills in volleyball, and there are various methods and techniques for performing it. It is a complex skill on which the offensive performance in volleyball depends. Therefore, the guided discovery method was appropriate for learning this difficult skill compared to other skills.

Through the verification of the three partial hypotheses, we can say that the general research hypothesis, which states that "there are statistically significant differences between the two

teaching methods (interactive and guided discovery) in their degree of influence on volleyball skill performance in physical education classes among third-year secondary school students” has been proven.

Conclusions:

After analyzing and discussing the results, we reached the following **conclusions**:

- 1- The reciprocal method has a positive effect on some basic volleyball skills (serving, receiving, and setting) among third-year secondary school students.
- 2- The guided discovery method has a positive effect on some basic volleyball skills (serving, receiving, and setting) among third-year secondary school students.
- 3- There is no difference between the effect of the reciprocal method and the guided discovery method on the receiving and serving skills in volleyball among third-year secondary school students.
- 4- The guided discovery method is better than the reciprocal method in teaching the serving skill in handball among third-year secondary school students.

Recommendations:

- 1- *Physical education and sports teachers should choose the appropriate teaching method to achieve the desired objectives of the lesson.*
- 2- *It is necessary to use both the reciprocal and guided discovery teaching methods in teaching all motor skills because of their positive effect on this, especially in volleyball.*

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