

THE EFFECTIVENESS OF EDUCATIONAL GAMES IN DEVELOPING CLASSROOM INTERACTION AND MOTOR SKILLS IN VOLLEYBALL LESSONS

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ABSTRACT

This study aimed to investigate the effectiveness of educational games in developing classroom interaction and improving volleyball motor skills among secondary school students aged 14–16 years in Baghdad Governorate. The sample consisted of 60 male students selected purposively from secondary schools and applied in the sports hall of the Directorate of Education of Baghdad Al-Karkh during the period from 10/9/2025 to 3/4/2026. A quasi-experimental design with a pre-test and post-test for a single group was used. The program of educational games was implemented within volleyball lessons to enhance students' engagement and skill performance. The study tools included a classroom interaction scale and performance tests for volleyball skills (serving, setting, and forearm passing). The results were analyzed using paired sample t-tests.

The findings revealed statistically significant differences between the pre-test and post-test results in favor of the post-test in all variables. This means that the educational games positively affected not only the classroom interaction, but also the motor skill performance. The findings suggest that the incorporation of an educational game to the physical education lessons contributes to an improvement in the motivation, participation and learning of skills by students as well as allows a more interactive and effective learning context than other didactic strategies.

KEYWORDS: Educational games, Classroom interaction, Volleyball skills

INTRODUCTION

In the last few decades, the education system has undergone huge changes in the way learning takes place and how it is taught, from a teacher-centred approach to a more interactive or learner-centred approach. In the area of Physical Education, these advances have highlighted the need to provide interesting learning contexts that allow students to be active subject of learning, engage socially in class and develop their motor skills. One innovative pedagogy that has been gaining more space is the incorporation of educational games into an educational process that stimulate cognitive and psychomotor learning outcomes. Educational games signify that for players to learn it is necessary to have an experience in which something is taught, something is enjoyed, something is played competitively, something is played cooperatively, and something is learnt.

Because of volleyball's educational, social and physical advantages it is one of the most popular team sports played by facilities at the educational level. Teaching volleyball demands a certain level of skills and abilities to be acquired by students in order to be effective including skills of serving, passing, setting and spiking as well as communication, teamwork and decision making. Traditional teaching and learning models, however, tend to be more focused on repetitive drill and direct teaching and learning, which can decrease students' motivation to learn and prevent meaningful classroom interaction. As a result, many teachers and researchers have looked into alternative methods of teaching that embrace more interactive and effective learning approaches.¹ One approach that has shown great potential for overcoming these challenges is through the development of educational games. Teachers can incorporate game elements into volleyball classes to foster students' motivation to actively participate in the teachings, cooperate with each other, and engage in healthy competition. These activities give students the opportunity to learn technical themed content in context and in fun manner, and facilitate social interaction and learning. In addition, educational games can adapt to the needs of each learner, boost motivation and offer instant feedback, which can also help learners to acquire and retain skills more effectively.²

The effect of classroom interaction is seen as an integral part of good learning processes. It includes communications and exchanges of ideas, experiences, and feedback between teacher and student, and among students. Positive classroom interaction in physical education results in cooperative learning, better social relationships and allows for an environment that enables engagement. Educational games are meaningful in nature and imply interaction, that is, the players are required to communicate, work together, to solve problems together, in equilibrium increasing both the social and educational components of learning. Educational games are also an important tool in developing motor skills as well as promoting interaction.³ It is known that learning the motor skills required to play volleyball is dependent on continued practice, coordination of movements, spatial awareness, and feedback. The game-based learning activities feature authentic movement experiences and promote learners' physical and cognitive engagement at the same time. The educational games allow students to practice and fine-tune their motor skills, coordination and develop their confidence in carrying out volleyball skills when conditions change.⁴

Though the research in game-based learning has been increasing, more empirical research is needed on the effectiveness of using game-based learning in a physical education context, specifically for the teaching and learning of volleyball. Knowing how well or hind educational games perform at improving classroom interaction and motor skills can help not only educators, but also curriculum designers and policy makers to improve learning outcomes and teaching quality. As a result, the purpose of this study was to investigate the utilization of the educational games in classroom interaction and motor skills in volleyball lesson as a part of research literatures related to the innovative teaching approaches for physical education and provide implications for generating effective classroom in school physical education.

RESEARCH PROBLEM

Now, physical education teachers are looking for effective teaching techniques to improve engagement and promote their students' development of sport skills. Although volleyball lessons have the potential to be successful educational experiences, many secondary schools still use traditional teaching practices that promote repetitive learning including teacher-centered instruction that could potentially decrease opportunities for students to have great experiences in the classroom and limit their ability to take active roles in their sessions. These practices may impact students' developmental stages for critical motor skills and decrease student learning motivation. One way that has proved to be effective and promising for education is the use of a method that is entertaining, competitive, cooperative and provides an opportunity for meaningful learning—the educational game. However, there is limited evidence regarding their effectiveness in improving classroom interaction and motor skill development among secondary school students in the Iraqi educational context. Therefore, the research problem lies in determining the effectiveness of educational games in developing classroom interaction and improving volleyball-related motor skills among male secondary school students aged 14–16 years in Baghdad Governorate during the academic period from September 10, 2025, to April 3, 2026.

RESEARCH OBJECTIVES

1. To identify the effectiveness of educational games in developing classroom interaction among male secondary school students aged 14–16 years during volleyball lessons.
2. To determine the effectiveness of educational games in improving selected volleyball motor skills among male secondary school students.
3. To compare the results of the pre-test and post-test measurements of classroom interaction and motor skills among students exposed to the educational games program.

RESEARCH HYPOTHESES

1. There are statistically significant differences between the pre-test and post-test measurements in classroom interaction in favor of the post-test among students participating in the educational games program.
2. There are statistically significant differences between the pre-test and post-test measurements in volleyball motor skills in favor of the post-test among students participating in the educational games program.

RESEARCH DOMAINS

1. **Human Domain:** A sample of 60 male secondary school students aged 14–16 years.
2. **Spatial Domain:** The sports hall of the Directorate of Education of Baghdad Al-Karkh, Baghdad Governorate, Iraq.
3. **Temporal Domain:** From September 10, 2025, to April 3, 2026.

RESEARCH METHODOLOGY

This study adopts a quasi-experimental design with a single-group pre-test and post-test approach to investigate the effectiveness of educational games in developing classroom interaction and motor skills in volleyball lessons. The study was conducted on a purposive sample of 60 male secondary school students aged 14–16 years from schools in Baghdad Governorate. The intervention was implemented in the sports hall of the Directorate of Education of Baghdad Al-Karkh during the period from 10/9/2025 to 3/4/2026.

RESEARCH PROCEDURE:

Before starting the educational program, pre-tests were administered to measure both classroom interaction and selected volleyball motor skills. The experimental program based on educational games was then applied over a series of structured physical education lessons. The program included game-based activities designed to develop cooperation, communication, and competitive engagement while simultaneously improving technical volleyball skills such as serving, passing, and setting. Each lesson integrated warm-up games, main educational games focusing on skill execution under modified conditions and concluding competitive game activities. After completing the intervention period, post-tests were conducted using the same instruments and procedures applied in the pre-tests.

RESEARCH INSTRUMENTS AND TESTS:

1. **Classroom Interaction Scale:**⁵ A validated observational checklist was used to assess students' interaction levels during lessons. The indicators included in the scale were verbal communication, cooperation, participation, response to instructions, and behavior in group work. A score was obtained for each lesson by trained observers as the lesson was implemented.
2. Volleyball Motor Skills Tests:⁶
 - **Serving Accuracy Test:** Measures the ability of students to perform legal serves directed toward designated target zones.
 - **Overhead Passing (Setting) Test:** Evaluates accuracy and control in setting the ball toward a target area.
 - **Forearm Passing (Reception) Test:** Assesses accuracy in receiving and directing the ball to a specified target.

The Standard Conditions and measure of accuracy and execution quality in each skill-test were standardized.

STATISTICAL ANALYSIS:

The statistical toolkit (SPSS) was used to process the research data and extract the results.

RESULTS

Table 1: Demographic characteristics of the research sample

Variables	Category	Number	Percentage
Gender	Male	60	100%
Age	14–15 years	28	46.7%
Age	15–16 years	32	53.3%
Total	—	60	100%

Table 2: Results of the Serving Skills Test

The group	Number	Pretest		Posttest		t value
		Mean	Std	Mean	Std	
Students	60	11.85	2.10	16.42	1.95	9.87*

In Table (2) for the passing test:

The t-value = 9.87* means that the improvement in passing skills between the pre-test and post-test is statistically significant in favor of the post-test.

Table 3: Results of the top scrolling test (Setting)

The group	Number	Pretest		Posttest		t value
		Mean	Std	Mean	Std	
Students	60	10.92	2.25	15.30	2.00	10.41*

In Table (3), scrolling from the top:

*t = 10.41

The asterisk indicates that the improvement in the setting skill is real and has a clear impact, not accidental.

Table 4: Results of the scrolling from below (Reception) test

The group	Number	Pretest		Posttest		t value
		Mean	Std	Mean	Std	
Students	60	10.15	2.30	14.78	2.05	11.02*

In Table (4), scrolling from below:

The t-value = 11.02* indicates that the improvement in reception is statistically very significant.

Table 5: Results of the classroom interaction and skills test combined

Variables	Pretest		Posttest		t value	Level of significance
	Mean	Std	Mean	Std		
Classroom interaction	30.20	5.10	42.85	4.20	10.55*	0.05
Serving skill	11.85	2.10	16.42	1.95	9.87*	0.05
Setting skill	10.92	2.25	15.30	2.00	10.41*	0.05
Reception skill	10.15	2.30	14.78	2.05	11.02*	0.05

(*) Indicates that all differences between the pre-test and post-test were statistically significant at the (0.05) level, which confirms the effectiveness of educational games in improving classroom interaction and motor skills in volleyball.

Discussion of Results

In the present study, the researcher wanted to see how the use of educational games was effective for the development of classroom interaction and improve the motor skills of men and women students in the secondary school of 14-16 years in Baghdad city. Results showed statistically significant differences between measurements taken in the pre and post tests in all variables: serving, setting, forearm passing, and classroom interaction. These findings are a good basis for the positive effects of game-based learning strategies in physical education contexts.

This substantial improvement in volleyball motor skills is due to the nature of educational games, which prepares the realistic and engaging learning environment and simulates the real game situation.⁷ Educational games involve dynamic practice of skills and do not follow a traditional drill approach, enabling students to experience the skills through ongoing movement, making choices and engaging actively in the game. This is according to a constructivist learning theory which argues that learners learn skills better when they actively participate in the learning process than receiving information passively.⁸ This positive improvement in serving performance indicates that the students' technical competence in serving under pressure had been significantly developed through the repetition of game-like experience. In motor skills, more practice, feedback and correction opportunities were likely possible through learning games in education. Likewise, remarkable improvement in setting and forearm passing shows the improvement in the hand-eye coordination, timing and spatial awareness that students had. The results in this study align with past studies that have demonstrated the benefits of game-based methods to enhance sport-specific motor skills through contextualised practice.⁹

Along with motor skills development, there was also a significant improvement in classroom interaction that was discovered.¹⁰ This improvement can be attributed to the characteristics of educational games where: Communication, collective decision making and collaboration are required. This encourages a more positive learning atmosphere, greater peer relationships and greater student motivation to participate effectively in lessons. Thus, students' involvement in the learning process becomes better and it affects the cognitive and psychomotor aspects.¹¹

In addition, the incorporation of educational games might have minimized anxiety and boredom regularly encountered during regular physical education classes. Elements of enjoyment and challenge kept students more engaged and motivated to learn throughout the process. This engagement can come in a variety of ways, and it is important to support

both in retaining skills after a session and keeping the attention paid to them.¹² This study's findings align with previous research which highlighted the value of active learning approaches in PE. Various studies have aforementioned that the use of games for learning improves motivation, participation, and motor performance as it fosters meaningful and enjoyable learning experiences. These current findings were to add to this body of knowledge an empirical evidence from the Iraqi secondary school context specifically in the field of volleyball instruction.¹³

Although the outcomes are positive it should be noted that this study was conducted with male students of one age group and area. Hence, care needs to be taken to extrapolate the outcomes to other populations. It is recommended to conduct further research with female students, with various age groups and other sports as well to further validate the effectiveness of educational games.¹⁴

Overall, the results provide compelling evidence that educational games can serve as a valuable educational tool for facilitating classroom interaction and improving volleyball motor skills. When incorporated into the actual PE lesson, they can have a substantial impact on the quality of the teaching and learning, enhance the engagement of PE, and increase the interactivity of the lesson, so that the lesson can be more skillful.

CONCLUSIONS

1. Educational games significantly positively affect the development of volleyball motor skill component (serving, setting and forearm passing) in secondary school students.
2. Educational games play an important role in increasing the interaction between students in the classroom in volleyball learning.
3. A statistically significant difference was found between pre-test and post-test scores in all of the variables studied in favor of the post test scores, proving the effectiveness of the applied program.
4. Educational games help raise the motivation level of students and their active involvement in PE lessons.
5. Educational games are integrated to make learning more engaging and interactive than with traditional educational methods.

RECOMMENDATIONS

1. Use of the Educational Games as an effective teaching method in volleyball classes in Secondary Schools Physical Education curriculum is recommended.
2. The training is needed for physical education teachers to learn and develop the planning and execution of educational game-based activity so that it can increase learning outcomes in students.
3. To incorporate educational games as an effective component of the acquisition of motor skills and enhancing students' engagement in other sports lessons.
4. Educational games, when applied in Physical Education context should be studied for different ages, genders, and sports to be generalized across various ages, genders and sports.

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