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The effect of blended learning with sequential and random exercises in learning the skills of setting and receiving the volleyball serve for students

Ahmed Abbas shilkam [1], Readh Khalil Kamas [2], Ghadah Muayad Shihab [3]

[1,2,3] University of Baghdad, College of Physical Education and Sports Science.

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Abstract

The aim of the research is to identify the effect of exercises with blended learning according to the sequential and random exercise and learning the skills of settings and receiving the serve with volleyball for students in the fifth grade of middle school. The importance of the research comes in developing the skills of setting and receiving the serve with volleyball in the physical education lesson for the fifth stage of middle school through blended learning and by scheduling the sequential exercise. random exercise, the research problem revolved around the fact that the performance is not at the required level among students at this stage in learning how to perform volleyball skills. This is due to the fact that most of the methods used in teaching basic volleyball skills are the traditional method used in applying the physical education lesson, so it was decided to use blended learning, which is Methods that can be applied in the game of volleyball, this method uses electronic technologies before the practical application of some skills. The researchers relied on designing exercises and they were given in the main section of the educational unit, where the research population was (93) students, and (36) students were randomly selected from the sections (A-B-C). The share of each section is (12) students after sick and failing students were excludedThe educational curriculum was applied, which consists of (16) educational units at a rate of (2) educational units per week, and after completing the post-tests, the researchers concluded that the effect of the three methods of basic volleyball skills (setting, receiving the serve), was, respectively, blended learning with scheduling. Random exercise in the

[1] University of Baghdad. College of physical Education and sport sciences. Ahmed.Abbas2204p@cope.uobaghdad.edu.iq.
[2] University of Baghdad. College of physical Education and sport sciences. Khaleel.Mohammed@cope.uobaghdad.edu.iq.
[3] University of Baghdad. College of physical Education and sport sciences. dr.ghada@cope.uobaghdad.edu.iq.

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first degree and blended learning with sequential exercise scheduling in the second degree, then the control group in the third degree.

Keywords: blended learning, sequential practice, random practice, setting, receiving serves.

Introduction

The scientific and informational development in our era is very important, requiring rapid adaptation to communicate with the world on everything new, including sports sciences. The learning process has taken a new and broad direction in the present time, as researchers now use the best and latest methods, tools, and techniques that assist the learner in research and inquiry by understanding the goal of the educational process. Physical education is considered a field of education and teaching, working on preparing individuals physically, skillfully, tactically, and emotionally. Therefore, most countries around the world have turned to developing their educational systems and reconsidering the established curricula and methods of implementation thru learning techniques in adopted educational systems to achieve effective learning. As for the field of school sports, it needs to activate the physical education lesson, which has become traditional. We know that school sports are distinguished activities thru the selection of players and talents, supplying national teams with outstanding players, juniors, youth, and distinguished young people to represent national teams in local and international competitions. Countries provide support and attention to school sports to activate school sports activities and give them special importance to reach the desired level. The researchers noticed that the performance of students at this stage in learning volleyball skills is not at the required level. This is due to the fact that most of the methods used in teaching basic volleyball skills are traditional methods applied in physical education classes. Therefore, they considered using blended learning, which includes methods that can be applied in volleyball. This approach utilizes electronic technologies before the practical application of some skills.

Volleyball is a team sport suitable for all ages and requires educational methods to improve learning processes and avoid traditional methods that generate boredom among learners. Therefore, it is essential to diversify teaching methods and choose the best approach for the type of game the teacher should teach to their students. This can be achieved thru the use of sequential drills, which aim to reach a good performance level in one skill before moving on to the next, while random drills aim to perform more than one skill within a single educational unit. The importance of the research lies in developing the skills of setting and receiving serves in volleyball during the physical education lesson for the fifth preparatory stage thru blended learning and scheduling sequential and random exercises. This is done by answering the following question: Is blended learning suitable for the chosen age group? What is the extent of the impact of blended

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learning on the acquisition of the skills of setting and serve reception in volleyball for the selected sample? The aim of the research is to identify the impact of blended learning exercises, according to sequential and random practice, on learning the skills of setting and serve reception in volleyball for fifth-grade preparatory students.

Among the studies that addressed blended learning, serial practice, and random practice is the study by Schiller (2021) titled "The Impact of Blended Motor Learning Strategy on Learning the Technical Performance of the Overhead and Underhand Serve Skills in Volleyball." The study aimed to prepare educational units for second-year male students in the College of Physical Education and Sports Sciences at the University of Baghdad for the academic year 2018-2019. The research sample consisted of 30 students who were randomly selected. The researcher followed the experimental method with an experimental group and a control group. The first experimental group used the blended learning method, while the second group (the control group) consisted of 15 students. The researcher concluded that there are significant differences between the two groups in the pre-test and post-test for both skills in learning the technical performance of them and the two groups, but we did not show significant differences between the experimental and control groups, so the study (Muhaibes, 2013) addressed (the effect of an educational curriculum using sequential and randomized exercise on the acquisition of the compatibility of hitting and blocking volleyball for juniors). The study sought to prepare educational units in the light of the curriculum system prepared by the researcher using the experimental method based on the sequential and random method, the researcher used the experimental method on his sample, which are the juniors of the Rumaitha Volleyball Club and their number was (18) players, the researcher concluded that the educational curriculum and the special exercises it included contributed to the acquisition and development of compatibility and there is a preference in learning between the two educational methods sequential and random in favor of the random method.

However, the study (Dhuha, 2014) examined (the effect of using programd and reciprocal learning methods in learning some basic volleyball skills among fourth-grade preparatory students). The study aimed to prepare educational units for the fourth-grade students of Al-Anwar Secondary School for Girls, affiliated with the Al-Karkh Second Education Directorate. The procedures consisted of a research sample of 30 students, and the experimental research was the method followed for two months, with two units per week, involving two experimental groups and one control group as follows: the programd learning group, the reciprocal learning group, and the control group. The conclusions indicated that the reciprocal method using homework sheets had an impact on learning basic volleyball skills and was more effective than the traditional method. Additionally, the use of homework sheets increases the potential for improving and developing the technical aspects of volleyball skills. The study (Walaa, 2011) addressed (the impact of blended

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network learning on learning outcomes in basic skills in volleyball for primary school students), where the study sought to prepare educational units on the students of the first stage of the Faculty of Physical Education at Mansoura University in Egypt for the academic year (2011 - 2010). 2010) and the research sample amounted to (60) female students, the researcher followed the experimental method with three experimental groups (two experimental groups and a control group) where the first experimental group used the educational website on the Internet, the second experimental group used blended network learning, while the control group followed the traditional method, where each group consisted of (15) students. The researcher concluded that the second experimental group that used blended network learning outperformed the first group (the educational website on the Internet) and the third group (traditional) in cognitive achievement and the level of skill performance in volleyball.

Methodology

The researchers used the experimental method with a three-group design (two experimental groups and one control group) as shown in Table (1).

Table 1. *Study Design*

Groups	Pre-test	Independent Variable	Post-test
Experimental Group A	Skills pre-tests	Educational units (blended – sequential)	Skills post-tests
Experimental Group B		Educational units (blended – random)	
Experimental Group C		The curriculum prepared by the Ministry of Education	

The research sample was determined to be fifth-grade students of the intermediate stage (Ibn Sina Intermediate School for Boys) affiliated with the Education Directorate of Baghdad Al-Karkh Al-Thaniya, totaling (91) students who represent the research community. The sample of (36) students was selected from the fifth-grade intermediate students' community thru a lottery from the academic divisions (A-B-C). The researcher also conducted a lottery to select the three research groups, choosing (12) students from each division. The two experimental groups follow the curriculum prepared by the researchers, while the control group adheres to the curriculum prepared by the Ministry of Education. The exploratory trial sample, consisting of (5) students, was selected randomly thru a lottery, and students who were ill or not regularly attending, totaling (5) students, were excluded as shown in Table (2).

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Table 2. *The Research Population and Sample*

Grade Level	Number of Classes	Number of Students per Class	Excluded Students	Research Sample Size	Percentage
Fifth Grade – Class A	1	31	2	12	39.56%
Fifth Grade – Class B	1	30	1	12	
Fifth Grade – Class C	1	30	2	12	
Total	3	91	5	36	

- The sample is homogeneous as they are all males and from the same age group.
- The samples were balanced by conducting a pre-test for both the experimental and control groups before starting the implementation of the curriculum in the skills under investigation, as shown in Table (3).

Table 3. *Homogeneity of the Research Groups in the Pre-Tests of the Study Skills*

Tests	Source of Variance	Sum of Squares	df	Mean Square	Calculated F-value	Sig. Value	Significance Level
Setting	Between Groups	0.47	2	0.23	0.17	0.83	Not significant
	Within Groups	44.41	33	1.34			
Serve Reception	Between Groups	5.35	2	2.67	1.61	0.21	Not significant
	Within Groups	54.65	33	1.65			

Note: A value in the significance field (Sig.) < 0.05 indicates statistical significance.

Skill tests used in the research

Volleyball setting skill test (Youssef, 2023, p. 68):

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The purpose of the test: Measuring volleyball setting skill.

Necessary tools: A basketball board containing the ring, 5 legal volleyballs, and a registration form.

Performance specifications : The test student stands in front of the basket at the free throw line on the circle line, the ball is lifted up and then passed to the basket, trying to pass it inside the basket as in Figure (3) Each test student is given (5) attempts.

Scoring: Ball away from the board (0) degrees, Ball touching the board (2) degrees, Ball touching the ring (3) degrees, Passing the ring inside the ring (5) degrees, Maximum test score (25) degrees

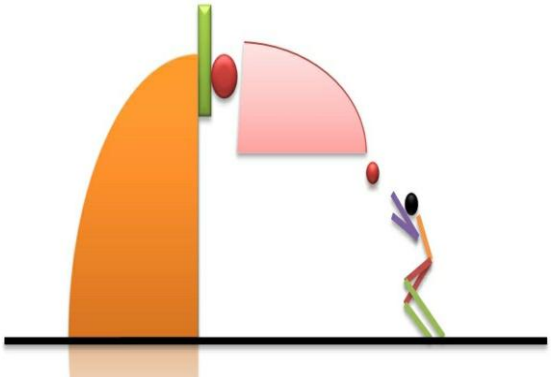

Figure 1. *Test of Setting Skill in Volleyball*

Test of serve reception in volleyball (Al-Dulaimi, 2014, page 84):
The purpose of the test: Measuring the skill of receiving the serve in volleyball.
Necessary tools: Legal volleyball court, 10 legal volleyballs, colored tape to divide play areas, metal measuring tape.
Performance specifications: The tested student performs (5) attempts from area (A) to positions (4, 3, 2) and (5) attempts from area (B) to positions (4, 3, 2). The tested student must adhere to receiving the ball from the designated area and directing it to the specified area, as shown in Figure (2).
Scoring: The student tester receives the score of the position where the ball lands as follows:
1. The ball that is in center (4) gives the tester (one point). The ball that lands in center (4) gives the tester (one point).
2. The ball that lands in center (3) gives the tester (two points). The ball that lands in center (3) earns the tester (2 points).
3. The ball that lands in center (2) earns the player (three points). The ball that lands in center (2) earns the tester (three points).
4. If the ball lands on the line between the two points, the score for the higher area is counted. If

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the ball lands on the line between the two points, the score is counted for the higher area.
5. The maximum score for this test is 30 points. The maximum score for this test is (30) points.

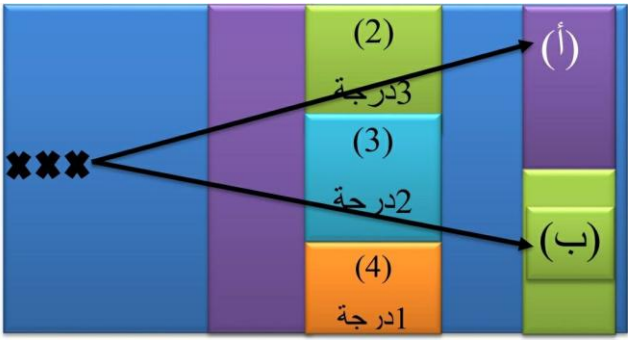

Figure 2. *Test of the skill of receiving the serve in volleyball*

The field experiment where the researchers conducted the pre-tests of the volleyball setting skill test and the volleyball service reception skill test for members of the research sample for the three groups (the two experimental groups and the control group) on the date 21/2/2024 on (Wednesday). to test the volleyball setting skill and on 2/22/2024 on (Thursday) to test the volleyball reception skill, in the presence of the assistant work team After completing the pre-tests, the researchers conducted the main experiment, which contains (the main section) of the educational unit of the educational unit on Sunday, 2/25/2024, which ended on Thursday, 4/18/2024, After completing the implementation of the educational curriculum (the main sections of the educational units), the researchers conducted the post-tests of the research sample to test the On Tuesday, 4/23/2024, and on Wednesday, 4/24/2024, the researchers were keen to conduct the tests in the outer yard of Ibn Sina Preparatory School in the same conditions and conditions and the same measures that they conducted as in the pre-test.

Results

Table 4. *Means, Standard Deviations, and Skewness for the Blended Learning Group with Sequential Practice Scheduling*

Variables	Pre-test Mean	Post-test Mean	Pre-test SD	Post-test SD	Pre-test Skewness	Post-test Skewness
Setting	12.50	16.67	1.16	1.07	0.00	0.25
Serve Reception	11.92	16.00	1.37	1.12	0.17	0.00

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Table 5. *Mean Differences, Standard Error, Calculated t-Value, and Significance Level*

Variables	Mean Difference	Standard Error	Calculated t-value	Sig. Value	Statistical Significance
Setting	4.16	0.29	14.01	0.00	Significant
Serve Reception	4.08	0.49	8.17	0.00	Significant

Table 6. *Means, Standard Deviations, and Skewness for the Blended Learning Group with Random Practice Scheduling*

Variables	Pre-test Mean	Post-test Mean	Pre-test SD	Post-test SD	Pre-test Skewness	Post-test Skewness
Setting	12.50	18.96	1.00	0.99	0.00	0.47
Serve Reception	12.50	18.83	1.16	1.11	0.00	0.56

Table 7. *Differences in Means Between Pre- and Post-tests, Standard Error, Calculated t-value, and Significance Level for the Blended Learning Group with Random Practice Scheduling*

Variables	Mean Difference	Standard Error	Calculated t-value	Sig. Value	Statistical Significance
Setting	6.41	0.43	14.76	0.00	Significant
Serve Reception	6.33	0.52	12.01	0.00	Significant

Table 8. *Means, Standard Deviations, and Skewness for the Control Group*

Variables	Pre-test Mean	Post-test Mean	Pre-test SD	Post-test SD	Pre-test Skewness	Post-test Skewness
Setting	12.33	14.75	1.30	0.96	0.15	0.13
Serve Reception	11.58	15.08	1.31	0.79	0.36	0.16

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Table 9. *Mean Differences Between Pre- and Post-tests, Standard Error, Calculated t-value, and Significance Level for the Control Group*

Variables	Mean Difference	Standard Error	Calculated t-value	Sig. Value	Statistical Significance
Setting	2.41	0.28	8.40	0.00	Significant
Serve Reception	3.50	0.46	7.46	0.00	Significant

Table 10. *ANOVA (F-test) Results for the Two Skills Under Investigation in the Post-tests*

Variables	Source of Variance	Sum of Squares	df	Mean Square	Calculated F-value	Sig. Value	Statistical Significance
Setting	Between Groups	104.38	2	52.90	50.90	0.00	Significant
	Within Groups	33.83	33	1.02			
Serve Reception	Between Groups	91.72	2	45.86	43.76	0.00	Significant
	Within Groups	34.58	33	1.04			

Table 11. *Differences in Means Among the Groups, Statistical Significance, and Direction of Significance*

Variables	Groups Compared	Mean Difference	Sig. Value	Statistical Significance
Setting	G1 – G2	1.91	0.00	Significant in favor of G2
	G1 – G3	4.16	0.00	Significant in favor of G1
	G2 – G3	2.25	0.00	Significant in favor of G2
Serve Reception	G1 – G2	0.91	0.03	Significant in favor of G2
	G1 – G3	3.75	0.00	Significant in favor of G1
	G2 – G3	2.83	0.00	Significant in favor of G2

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Discussion

After presenting the results thru the previous tables, it became clear that there is a significant difference in the skill of preparation between the first experimental group, which learned (sequential blended learning), and the second experimental group, which learned (random blended learning), in favor of the second experimental group. As for the first experimental group, which learned (sequential blended learning), and the control group in preparation, a significant difference was evident in favor of the first experimental group that learned (sequential blended learning). However, for the second experimental group, which learned (random blended learning), and the control group in the skill of preparation, the difference was significant in favor of the second experimental group that learned (random blended learning).

As for the skill of receiving the serve, there is a significant difference between the members of the first experimental group who learned (sequential blended learning) and the members of the second experimental group who learned (random blended learning) in the skill of receiving the serve, in favor of the second experimental group. However, the members of the first experimental group who learned (sequential blended learning) and the members of the control group in the skill of receiving the serve show a significant difference in favor of the first experimental group who learned (sequential blended learning). As for the members of the second experimental group who learned (random blended learning) and the members of the control group in the skill of receiving the serve, the difference was significant in favor of the second experimental group who learned (random blended learning).

The researchers attribute the reasons for the superiority of the second experimental group that learned (blended learning in the random exercise method) in the two skills (setting and receiving the serve) in volleyball over the rest of the two groups (the sequential blended learning group and the control group), to the effectiveness of the students' learning in this group to the speed of shifting attention and concentration and adapting fast motor programs for the purpose of facing changing situations while performing the exercises that were prepared in addition to the The blended learning booklet through which a complete and sufficient picture was taken of the method of performing the skill, whether it is in the skill of preparation or the skill of receiving the transmission, reinforced with videos and still and moving images through which a complete idea was communicated to learners in order to know all the information that is related to the two skills and the frequency of exercises because it is related to mental processes and the speed of response of the nervous system in learning the skills of preparation and receiving the transmission (Sabr, 2005, page 106) "The individual cannot reach the precise level (mechanism) without practice (repetition), and practice does not mean mere repetition but repetition coupled with a thorough

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understanding of the instructions (Feedback) given by the coach and teacher." Furthermore, the role of feedback contributed to the development of my skills in preparation and reception in this group. As mentioned by Mahgoub (1998, p. 85), feedback is sensory external information that enters during or after responses to improve performance and correct information about the movement trajectory. It is a process that facilitates learning and sports training. Researchers attribute the reasons for excellence to the use of video clips and still images, as they increased the excitement among learners by engaging the senses of sight and hearing, thus creating a distinctive educational atmosphere. This was confirmed by Al-Hiliya (2001, p. 316) "What distinguishes video is the element of excitement resulting from sound, moving images, reinforcement, and stimulation," confirmed Schmidt (1999, p. 96). He emphasized the use of audiovisual sensory elements in information delivery, movement organization, and coordination. These elements provide information about the environment in which one learns, as well as the state and movements of our bodies. They are considered the largest receivers for processing information about the movement of external objects in the world. Researchers attribute the superiority of this group to their rapid control over attention shifting, high anticipation, and the preparation of motor programs that change play positions. This can be likened to open skills (in an open environment) due to the variety of skill exercises during the practical part of the main section, which made their performance nature in an open environment involve changing situations during execution.

Conclusions

1. The impact of the three methods of basic volleyball skills (setting, reception) was, respectively, blended learning with random practice scheduling in the first degree, blended learning with sequential practice scheduling in the second degree, and the control group in the third degree. The effect of the three methods on the basic volleyball skills (setting, reception) was, respectively, blended learning with random practice scheduling in the first degree, blended learning with sequential practice scheduling in the second degree, and the control group in the third degree.
2. The use of modern educational technology and the blended learning booklet, thru their experimentation on the first and second groups, significantly contributed to achieving superiority over the control group, which is followed by the teacher. The use of modern educational technology and the blended learning booklet, thru their experimentation on the first and second groups, significantly contributed to achieving superiority over the control group followed by the teacher.

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3. Integrating and diversifying educational methods in learning and developing basic skills in volleyball for students. Integrating and diversifying educational methods in learning and developing basic skills in volleyball for students.

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