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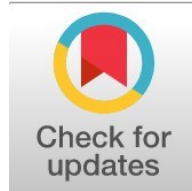
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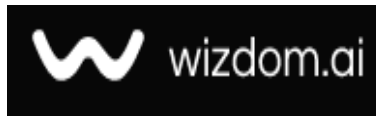
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The Effect of Using Blended Learning on Developing Passing and Dribbling Skills in Basketball Among Middle School Students in Najaf Governorate Schools

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Abstract

General Background: Basketball requires fundamental technical skills that support ball movement, possession, attack organization, and scoring opportunities. **Specific Background:** Passing and dribbling are important basketball skills, yet traditional instruction may provide limited opportunities for repeated observation, practice, and self-correction. **Knowledge Gap:** Scientific investigation is needed to determine how blended learning compares with traditional instruction in developing these fundamental skills among female middle-school students. **Aims:** This study examines a blended learning program for developing basketball passing and dribbling skills among female middle-school students in Najaf Governorate. **Results:** An experimental design with two equivalent groups and pre- and post-tests was applied to 40 female students aged 14–16 years, with 20 students assigned to each group. The experimental group received face-to-face instruction combined with digital educational resources, while the control group followed traditional instruction. Passing scores in the experimental group increased from 12.45 to 17.85, with $t = 8.74$ and $p < 0.001$, representing 43.37% improvement. Dribbling scores increased from 18.74 to 25.63, with $t = 9.62$ and $p < 0.001$, representing 36.77% improvement. Post-test comparisons favored the experimental group, with Cohen's d values of 2.13 for passing and 1.83 for dribbling. **Novelty:** The study combines face-to-face basketball instruction with videos, images, presentations, demonstrations, and online learning activities. **Implications:** The findings support the use of blended learning resources within basketball instruction for repeated observation, practical application, feedback, and skill review.

Highlights:

- Passing scores increased by 43.37% in the experimental group.
- Dribbling scores increased by 36.77% after the program.
- Cohen's d reached 2.13 and 1.83 for the two skills.

Keywords: Blended, Learning, Dribbling, Skills.

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Introduction

Physical education is a crucial educational field that contributes to the holistic development of the learner's personality. It plays a vital role in fostering physical, skill-based, intellectual, social, and emotional growth, particularly among middle school students who are experiencing a period of rapid development and significant changes in their physical, motor, and cognitive abilities. Therefore, developing methods and approaches for teaching sports skills has become a subject of increasing interest, aiming to enhance learning and achieve better educational outcomes that align with the demands of modern education.

Basketball is a team sport characterized by its diverse and interconnected basic skills and varied playing situations. It involves a high degree of motor coordination, agility, movement accuracy and prompt reflex and the capacity to perceive and make suitable choices in play. Passing and dribbling are some of the most notable fundamental skills in basketball.[1] These are the basic skills which underpin individual and team performance, which lead to ball movement, possession, attack organization and creation of scoring opportunities. Thus, the learning of these two abilities at the initial stages of education is a significant base to build the following skills of learners. [2]

The past few years have seen outstanding growth in the education process due to the incorporation of digital technologies and modern communication tools in education. This has seen the new models of education come up which aim at integrating the benefits of the classic and e-learning. [3] Among the most noticeable of these tendencies is the blended learning that is premised on the systematic combination of face-to-face teaching with the application of electronic educational media and technologies. This creates more flexible and interactive learning environment and by providing learners with many opportunities to observe, apply, feedback and learn at their own speed and ability. [4]

Blended learning especially matters in imparting mathematical skills. The teacher can introduce the skill to the students and thereafter support the learning process through videos, pictures, movement models, and digital apps. [5] These enable the learner to watch the performance of the correct performance several times and compare his or her performance with the required model. This may help in a better explanation on the sequence of movement of the skill, minimizing errors, and enhancing the learning process. [6]

Moreover, blended learning can increase the involvement of the student in the learning process by making her more active and engaged, but not merely receiving information and instructions provided by the teacher. It also offers a learning environment that considers the individual differences of the students, giving them more practice, repetition and review opportunities. Thus, this strategy can benefit the acquisition of basketball skills (especially passing and dribbling) since they are skills that must be practiced, observed constantly, and corrected when mistakes are made. [7]

Although modern teaching approaches are important, systematic scientific investigation is needed to establish the amount of development that blended learning can cause with some of the basic basketball skills that middle school students have developed under the influence of the approach, as opposed to the traditional teaching approaches. [8] The present research paper has thus examined the effectiveness of blended learning in the development of passing and dribbling basketballs skills in students in the schools in the Governorate of Najaf. This was done by introducing an educational program using the resources at hand in both conventional and online learning which helped in the building-up of the level of skills in the students and enhancing the effectiveness of the physical education curriculum.

Research Problem

Dribbling and passing are two key skills in basketball that middle school students should master. Yet, acquiring such skills may be difficult because some of the traditional teaching strategies presuppose the use of verbal explanations, direct demonstrations, and minimal application. This may not provide students with sufficient opportunities for repeated observation, practice, and self-correction, in addition to individual differences in the speed of comprehension and motor learning among students.

Observing the current state of basketball skills education in schools highlights the need to utilize modern teaching methods that combine the characteristics of direct instruction with electronic technologies. This would enhance learning effectiveness and provide students with greater opportunities to observe, repeat, and practically apply correct skills.

Therefore, the research problem is defined by the following question:

Does blended learning have an impact on developing passing and dribbling skills in basketball among middle school students in Najaf Governorate schools?

Research Objectives

1. Develop an educational program using blended learning to improve the passing and dribbling skills of middle school students in basketball.
2. Identify the effect of using blended learning on developing the passing and dribbling skills of middle school students in basketball.
3. Identify the effect of using blended learning on developing the dribbling skills of basketball students in basketball.
4. Identify the differences between the pre-test and post-test results in the passing and dribbling skills of the research sample.

Research Hypotheses

1. There are statistically significant differences between the pre-test and post-test results in the passing and dribbling skills of middle school students in basketball, favoring the post-test.
2. There are statistically significant differences between the pre-test and post-test results in the dribbling skills of basketball students in basketball, favoring the post-test.
3. There are statistically significant differences in the level of skill development in the passing and dribbling skills of basketball because of using blended learning.

Research Scope

1. Human Scope: 40 female middle school students aged 14–16.
2. Spatial Scope: One middle school in Najaf Governorate. The specific school will be determined based on the research sample and the location for conducting the tests and applications.
3. Temporal Scope: The 2025–2026 academic year, from November 1, 2025, to March 4, 2026.

Research Methodology and Procedures

A. Research Methodology

The researcher adopted the experimental method as it is suitable for the nature of the research problem and its objectives. It is considered one of the most appropriate methods for revealing the effect of the independent variable on the dependent variables. The independent variable in this research is the blended learning approach, while the dependent variables are the performance level of the basketball passing and dribbling skills.

The experimental design with two equivalent groups (experimental and control) will be used, along with pre- and post-tests. The experimental group will be exposed to the educational program prepared according to the blended learning approach, while the control group will learn according to the teaching method used by the physical education teacher. The results of the two groups will then be compared in the post-tests.

B. Research Population and Sample

The research population consists of female middle school students in schools affiliated with the Najaf Governorate Education Directorate, aged between 14 and 16 years.

The research sample was selected purposively and consisted of 40 female students, divided into two equal groups: an experimental group of 20 students and a control group of 20 students.

The experimental group (20 students) learned the skills of passing and dialogue using a blended learning approach.

The control group (20 students) learned the same skills using the traditional teaching method employed at the school.

The sample was subjected to tests and measurements prior to and after the educational program.

C. Homogeneity and Equivalence of the Research Sample

The researchers focused on homogeneity of the sample members in some variables that might affect the research results, such as:

1. Age.
2. Height.
3. Mass.

Some physical variables related to skill performance, such as agility, coordination, and reaction speed.

To ensure that the sample members represented a population with similar basic characteristics, the mean, standard deviation and the skewness coefficient of the above variables were calculated to confirm the homogeneity of the sample members. [9]

The pre-test results allowed establishing the equivalence of the experimental and control groups in the two skills under study, with the help of the relevant statistical tests.

D. Research Variables

1. Independent Variable

- Blended Learning Method

2. Dependent Variables

- Basketball Passing Skill.
- Basketball Dribbling Skill.

E. Data Collection Tools and Methods

A set of tools and methods enabled the researcher to gather data, including:

1. Basketball court.
2. Regular basketballs suitable for the students' ages.
3. Floor cones and markings.
4. Electronic stopwatch.
5. Measuring tape.
6. Medical scale.
7. Length measuring device.
8. Results recording forms.
9. Electronic calculator or computer.
10. Smartphone or projector.
11. Data projector (if available).
12. Skill instructional videos.
13. Experts in Arabic and foreign sources and references.
14. Survey form of expert opinion.

F. Selecting Skill Tests [10]

Tests measuring passing and dribbling skills were selected, taking into account the age group and the nature of the research. The proposed tests were discussed with a panel of experts and specialists in teaching methods in physical education, basketball, testing and measurement to verify their applicability and validity to the participants.

1. Passing Skill Test

A test was embraced to test the accuracy and speed of passing. The student does a certain number of passes on a target or wall that is provided to him/her in a given period. Based on the test criteria, the number of correct passes or number of points earned by the student is computed.

2. Dribbling Skill Test

A dribbling test was also introduced where dribbling of the ball between a series of cones was done over a given distance. The student runs through the marked area with the ball as fast as possible. Recording Time taken to take the test and calculations of error are done based on the approved test criteria.

a. Pilot Study

The researcher did a pilot study involving an appropriate sample of female students not part of the main research sample prior to undertaking the main experiment.

The pilot study was to examine to:

- Ensure the suitability of the tools and equipment used.
- Ensure the validity of the skills tests.
- Determine the time required to administer the tests.
- Ensure the clarity of the test instructions for the students.
- Train the support team in administering the tests and recording the results.
- Identify the difficulties and obstacles that the researcher might encounter during the main experiment.
- Determine the appropriate sequence for administering the tests.
- Ensure the suitability of the educational program content for the age group of the research sample.

After completing the pilot study, the necessary adjustments were made to the procedures before commencing the main experiment.

b. Developing the Educational Program Using Blended Learning

The researcher developed an educational program based on blended learning to enhance the students' passing and dribbling skills in basketball.

The program combines:

- Face-to-face instruction with digital e-learning.

The face-to-face component includes explaining, demonstrating, and practically applying the skill, as well as correcting errors. The online component includes providing supporting digital content such as:

- Educational videos.
- Illustrative images.
- Presentations.
- Examples of correct performance.
- Supporting online exercises.
- Reviewing the skill performance.
- Short assignments or learning activities.
- The digital content is presented in an organized manner before, during, or after the lesson, depending on the nature of the skill.

G. Program Content

The program includes a series of learning units that focus on:

1. Passing Skills

- a. Chest Pass.
- b. Bounce Pass.
- c. Overhead Pass.
- d. Passing on the Move.
- e. Passing with a Teammate.
- f. Passing in Game-Similar Situations.

2. Dialogue Skills

- a. Right-handed dialogue.
- b. Left-handed dialogue.
- c. Dialogue while walking.
- d. Dialogue while running.
- e. Changing direction during dialogue.
- f. Dialogue between cones.
- g. Dialogue in game-like situations.

Simple to complex exercises are based on the principle of gradual progression of the easy to the difficult.

H. Implementing the Educational Program

The implementation process of the program is carried out over a specified period with the pilot group with weekly units of learning that are coordinated with the school schedule.

The learning unit is divided into three major sections:

1. Preparatory Section

This includes:

- a. Taking attendance.
- b. Student preparation.
- c. General and specific warm-up exercises.
- d. Explaining the unit objectives.

2. Main Section

This includes:

a. Theoretical Aspect

- Introducing, describing and showing the technical steps of the skill with the help of videos, pictures, and movement models.

b. Practical Aspect

- Individual, pair and group practical exercises.

c. Feedback

- Correcting errors and providing immediate feedback, with the possibility of replaying the video when needed.

3. Concluding Section

This includes:

- a. Cooling-down exercises.
- b. Relaxation exercises.
- c. A brief review of the skill.
- d. Guiding students to the next online activity when needed.

The control group follows the regular curriculum taught by the physical education teacher, with efforts made to standardize the overall conditions as much as possible.

4. Pre-Testing

Before implementing the educational program, pre-tests are administered to both the experimental and control groups.

The tests include:

- A scrolling skills test.

- A conversational skills test.

The testing conditions are fixed in terms of location, equipment, timing, test sequence, and method of recording results, in order to minimize the influence of external variables.

5. Implementing the Main Experiment

After completing the pre-tests, the researcher begins implementing the educational program with the experimental group using a blended learning approach, while the control group continues learning using the traditional method.

During the experiment, the researcher ensures the following:

- a. Standardizing the number of learning units as much as possible.
- b. Standardizing the duration of each learning unit.
- c. Standardizing the core skills content.
- d. Standardizing the testing location.
- e. Not exposing either group to additional educational programs related to the research variables.
- f. Recording absences.
- g. Regularly monitoring the implementation of the learning units

6. Post-Test

After the completion of the training program, post-tests are administered to both the experimental and control groups, using the same tests used in the pre-test.

The post-test is conducted under the same conditions and procedures as the pre-test, as far as possible. The results are then collected and ranked in preparation for statistical analysis.

a. Controlling Extraneous Variables

The researcher ensured control over variables that could influence the experiment's results, most importantly:

- Age.
- Gender.
- Prior experience.
- Physical condition.
- Number of learning units.
- Duration of each learning unit.
- Training location.
- Tools used.
- Pre- and post-tests.
- Test conditions.

The sample members were selected from approximately the same age group and divided into two groups with similar basic characteristics.

I. Statistical Methods

After data collection and processing, the data were analyzed using appropriate statistical software, such as SPSS, and the following statistical methods were employed:

1. Meaning.
2. Standard deviation.
3. Crooking coefficient.
4. Percentages (when needed).
5. Test for paired samples to compare the pre- and post-tests of the same group.
6. Test for independent samples to compare the experimental and control groups.
7. Effect size to determine the magnitude of the effect of the blended learning approach, which is particularly important in experimental research.
8. A statistical significance level of (0.05) was adopted.

Results and Discussion

A. Results

1. Homogeneity of the Research Sample

Table 1. show Means, Standard Deviations, and Skewness Coefficients for the Homogeneity Variables of the Research Sample (n = 40)

Variable	Unit	Mean	SD	Skewness
Age	years	15.05	0.68	0.12
Height	cm	158.70	5.21	-0.18
Body mass	kg	53.45	6.17	0.21

Table 1 shows that the skewness coefficients for age, height, and body mass ranged within acceptable limits, indicating that the research sample was relatively homogeneous in the selected anthropometric variables.

2. Equivalence of the Experimental and Control Groups

Table 2. Show Pre-test Equivalence between the Experimental and Control Groups in Passing and Dribbling Skills

Variable	Group	n	Mean	SD	t-value	Sig.	Significance
Passing	Experimental	20	12.45	1.86	0.41	0.684	Not significant
Passing	Control	20	12.30	1.92			
Dribbling	Experimental	20	18.74	2.31	0.36	0.721	Not significant
Dribbling	Control	20	18.91	2.47			

The results indicate no statistically significant differences between the experimental and control groups in the pre-test results for passing and dribbling skills, as the significance values were greater than 0.05. This indicates that the two groups were equivalent before the implementation of the educational program.

3. Experimental Group – Passing Skill

Table 3. Show Differences between Pre-test and Post-test Results of the Experimental Group in the Passing Skill

Test	n	Mean	SD	t-value	Sig.	Significance	Improvement %
Pre-test	20	12.45	1.86	8.74	<0.001	Significant	—
Post-test	20	17.85	1.64				43.37%

The results demonstrate a statistically significant difference between the pre-test and post-test results of the experimental group in the passing skill. The mean score increased from **12.45** in the pre-test to **17.85** in the post-test. The calculated t-value was **8.74**, with a significance level of less than 0.001, indicating significant improvement following the implementation of the blended learning program.

4. Experimental Group – Dribbling Skill

Table 4. Show Differences between Pre-test and Post-test Results of the Experimental Group in the Dribbling Skill

Test	n	Mean	SD	t-value	Sig.	Significance	Improvement %
Pre-test	20	18.74	2.31	9.62	<0.001	Significant	—
Post-test	20	25.63	2.08				36.77%

Table 4 indicates a statistically significant difference between the pre-test and post-test results of the experimental group in the dribbling skill. The mean score increased from **18.74** to **25.63**. The calculated t-value was **9.62**, with $p < 0.001$, demonstrating significant improvement in dribbling performance after applying the blended learning program.

5. Control Group – Passing Skill

Table 5. Show Differences between Pre-test and Post-test Results of the Control Group in the Passing Skill

Test	n	Mean	SD	t-value	Sig.	Significance	Improvement %
Pre-test	20	12.30	1.92	3.21	0.005	Significant	—
Post-test	20	14.20	1.78				15.45%

The results show a statistically significant improvement in the passing skill among the control group. However, the magnitude of improvement was considerably lower than that observed in the experimental group, with an improvement rate of **15.45%**, compared with **43.37%** for the experimental group.

6. Control Group – Dribbling Skill

Table 6. Demonstrate Comparisons of Pre-test and Post-test Scores of Control Group in Dribbling Skill

Test	n	Mean	SD	t-value	Sig.	Significance	Improvement %
Pre-test	20	18.91	2.47	3.68	0.002	Significant	—
Post-test	20	21.65	2.29				14.49%

Results indicate that there is statistically significant improvement in the dribbling skill of the control group. However the rate of improvement was less than that of the experimental group indicating that though traditional instruction also helped in developing the skills, the blended learning method was much more effective.

7. Comparison between Groups, after the test, Passing

Table 7. Show Differences between the Experimental and Control Groups in the Post-test Passing Skill

Group	n	Mean	SD	t-value	Sig.	Significance
Experimental	20	17.85	1.64	6.56	<0.001	Significant

Control	20	14.20	1.78
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The findings show that there is a statistically significant difference in the post-test performance of the experimental and the control group in passing the performance, where the experimental group scored higher. This finding suggests that the blended learning program was more effective in developing passing performance than the conventional instructional approach.

8. Post-test Comparison between Groups – Dribbling

Table 8. Show Differences between the Experimental and Control Groups in the Post-test Dribbling Skill

Group	n	Mean	SD	t-value	Sig.	Significance
Experimental	20	25.63	2.08	5.62	<0.001	Significant
Control	20	21.65	2.29			

The results demonstrate a statistically significant difference between the experimental and control groups in the post-test dribbling performance, favoring the experimental group. This indicates that the blended learning approach had a positive effect on the development of dribbling skills among the participating students.

9. Effect Size of the Blended Learning Program

Table 9. Show Effect Size of the Blended Learning Program on Basketball Passing and Dribbling Skills

Skill	Cohen's d	Effect Size
Passing	2.13	Very large
Dribbling	1.83	Very large

The calculated effect sizes indicate a very large practical effect of the blended learning program on both passing and dribbling skills. The findings suggest that the statistically significant differences were also practically meaningful.

B. Discussion

The findings of the current research proved that not only did the experimental group record statistically significant gains in both basketball passing and dribbling skills after the application of the Blended Learning approach, but also that the experimental group improved these skills significantly. The results showed that the average score of the experimental group went up to 12.45 in the pre-test to 17.85 in the post-test on passing skill and the t-value of the difference was statistically significant ($t = 8.74$, $p = 0.001$). Likewise, the average of the dribbling skill grew by 18.74 to 25.63 with a statistically significant t-value of 9.62 ($p < 0.001$). These results suggest that the blended learning-based educational program had a favorable influence on the enhancement of the chosen basketball skills.[11]

The enhancement in the experimental group can be explained by the quality of blended learning that provides a combination of face-to-face instruction and use of digital learning tools. This mix gives learners the possibilities to get a verbal explanation and practical demonstration explained by the teacher and, at the same time, to use videos, visual demonstrations, and to repeat watching the correct technical performance.[12] This learning setting can improve students knowledge of the sequential elements of basketball skills and allow the students to recognise and correct mistakes more efficiently.[13]

The passing skill development can be attributed to repetition of visual delivery of the correct body position, hand placement, direction of movement and follow-through in the passing action. Passing is a skill that involves accuracy, timing, coordination and the use of suitable force.[14] Instructional videos may be used to enable students to view these components many times and compare their own performance with the

model. Therefore, the students can come up with a more vivid image of the movement pattern, which can lead to better execution of the motor activity.[15]

The enormous enhancement of the dribbling performance may also be explained by the fact that with the help of blended learning, it is possible to observe and practice. The process of dribbling involves the coordination of visual perception, hand movement, body balance, speed and control of the ball.[16] The digital instructional resources can guide students to learn about the proper position of the hand, rhythm, body posture, and direction changes before implementing them practically. Repetition along with instant feedback could thus result in enhanced control and efficiency of movement.[17]

It was also demonstrated that the control group made statistically significant increases in both dribbling and passing abilities. The degree of improvement was however significantly less than the level of improvement in the experimental group. The control group and experimental group had a passing improvement rate of 15.45% and 43.37%, respectively, and a dribbling improvement rate of 14.49 and 36.77, respectively. This shows that traditional instruction can be a part of learning and skill development but incorporating digital materials with traditional teaching might offer some extra benefits to learning.[18]

The fact that the experimental and control groups have significant post-test differences also justifies the effectiveness of the blended learning approach. Mean scores of the experimental group were higher than the control group in passing and dribbling. Moreover, the extremely large Cohen d values imply that the differences that were observed were not only statistically significant but also practically meaningful. This indicates that the blended learning intervention significantly influenced the learning of basketball skills.[19]

Another factor that may be associated with the effectiveness of blended learning is the fact that it is able to accommodate individual differences among students. It is possible that female students aged 14-16 years may vary in the speed of motor learning, attention, and performance in learning motor sequences. Online resources enable students to read teaching materials more than once and at their own pace and face-to-face teaching offers immediate supervision, correction, and feedback. This integration provides a flexible learning atmosphere as compared to using traditional instruction.[20]

Moreover, the motivation and engagement in the process of physical education lessons can be enhanced by the active participation of the learner in the blended learning. Students do not have to be confined to watching the teacher demonstrate something in the lesson but can work with instructional materials before, during, and after practical activities.[21] This prolonged learning experience could enhance the quantity of significant practice and solidify the motor knowledge needed to acquire skills successfully.[22]

Thus, the findings of the current research confirm the hypotheses and suggest that Blended Learning is a promising teaching method to cultivate female middle-school students in basketball passing and dribbling. The results support the significance of the combination of modern educational technologies with the physical education programs without depriving physical education of practical instruction. The presence of the technological resources, teacher tutoring, practice, and immediate feedback seems to offer an all-encompassing learning experience that has the potential to enhance the performance of the students in basketball.

Conclusions

1. The application of the Blended Learning method positively impacted the acquisition of the basketball passing skill among the female middle-school students of the age group 14-16 years with a statistically significant impact.
2. The Blended Learning methodology played a significant role in enhancing the dribbling skill as indicated by the large variations between the results of the pre-test and post-test of the experimental group.
3. The experimental group which was taught the skills with the help of the Blended Learning approach improved more in both passing and dribbling skills, than the control group which was taught the skills with the help of the conventional instructional method.
4. Combining the face-to-face training with the digital learning resources, e.g., instructional videos and visual demonstrations, offered the students with more chances to observe, practice, repeat, and correct technical performance.

5. These results suggest that Blended Learning may be regarded as an efficient contemporary teaching tool in physical education, especially to impart and train basic basketball skills among female students in the middle school.

Recommendations

1. It is advisable that physical education teachers embrace and inculcate Blended Learning methods in basketball training, especially when it comes to learning the basics of passing and dribbling.
2. To facilitate blended physical education, schools and other institutions of learning need to have the required digital infrastructure, equipments and learning materials, such as projectors, tablets, smartphones, instructional videos, and appropriate digital learning systems.
3. Training courses and workshops on how to design and implement a Blended Learning program and create or choose high-quality digital instruction on sports skills should be offered to physical education teachers.
4. More experimental research is needed to examine the effectiveness of Blended Learning in training other basketball skills and physical, cognitive, and tactical variables and across various age groups and educational stages.

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