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The effect of blended learning on learning some offensive skills in handball for middle school students

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Abstract

The purpose of this study was to design the proposed educational program using blended learning approach and study the effect of this approach on learning the basic skills of handball in middle school students. The researcher used quasi-experimental design to investigate the effectiveness of the proposed program and the effect upon the students' skill performance. The study sample included 30 middle school students from the Republic of Iraq in the 2024/2025 school year selected purposefully based on the objectives of the study. The proposed program combined traditional face-to-face teaching with electronic and multimedia teaching materials such as textbooks, audio materials, pictures, music, and teaching videos. Conventional paper materials were not used, and the teacher was still able to give explanation, demonstration, guidance, supervision and corrective feedback during the learning process. The results showed that the blended learning method was effective in increasing the performance level of the experimental group in the basic handball skills targeted in the experiment. The students' motivation was also enhanced by the integration of electronic resources with teacher guidance, which made them interact with the learning materials and gave opportunities to observe, practice, review, and correct. Furthermore, the program assisted with individual differences between learners by providing learning content in various formats and providing the learners learning at various speed. Multiple feedbacks also helped identify the errors in performance and strengthened correct motor responses. Overall, the findings indicate that blended learning is a promising method for skill acquisition and to improve physical education instruction for middle school students.

Keywords: educational program, blended learning, basic handball skills.

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Introduction

The current age is marked by constant and quick changes in the society due to incredible developments in science, technology, communication and information technology. All of these developments have played a major part in the elimination of geographical and temporal distances and have turned the world into what is often called a small, interdependent village. Educational systems are thus increasingly expected to "catch up" with these fast changes, to adjust their methodology, strategies, and educational environments in a way that allows them to meet the challenges of modern education. The many problems that stand out include the vast amount of information that is readily available, the ever increasing number of learners, the lack of qualified teachers in certain education settings, and also geographical distances between learners and sources of knowledge.

This has led to the current diversity in patterns, strategies and methods of teaching and learning. They have also brought learners into contact with others, the sharing of knowledge and experience, and the interaction in learning environments that are rich in diversity of learning resources. In the modern period, education is not only about the one-way transmission of information from the teacher to the student. Rather, efforts have been focused on building learning environments that are flexible and interactive, where learners can seek and pursue new knowledge, engage in exploration, learn on their own and together, and expand their skills and knowledge throughout the course.

In this context, e-learning has become one of the important learning methods that has been related to technological development. E-learning plays its part in shifting the education process from the traditional model, which is mainly dependent on the teacher's information transmission and the learner's reception and memorization of information to a communication model, dialogue, participation, and continuous interactions between the teacher and the learner. This change is an important educational goal, especially in the quest of enhancing the quality and efficiency of the teaching and learning process.

E-learning also empowers the learner with increased responsibility for his own learning. Students can be more active in the learning process by exploring, experimenting, expressing, interacting and accessing information independently. Consequently, the role of the teacher and the student is being gradually changed. The student is an active learner who seeks knowledge, engages with learning content and actively creates understanding instead of passively receiving information. Also, the teacher's function is shifted from being an information provider and lecturer to being a facilitator, organizer, supervisor and guide in learning.

E-learning, therefore, could be seen as conscious use of technology and modern technological tools in the educational process, which facilitates self-directed learning and focuses the learner's needs at the centre of instruction. It can start with relatively simple technological tools developed to present and clarify the educational content, such as multimedia, electronic presentations, computers, audio materials, images and video. It could also be applicable to higher-level educational settings that transcend classroom space, such as smart schools, e-learning platforms, and virtual classrooms. These spaces allow for the interaction of teachers, learners and educational material via the Internet, interactive video technologies and other modern communication systems.

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Abdullah Al-Mousa (2002) suggested that e-learning is an educational approach that relies on modern communication tools like computers, computer networks, and electronics and multimedia tools like images, sound, graphics, search mechanisms, electronic libraries and Internet portals. These tools can be applied in distance education or in the regular classroom setting to enhance learning and access to learning content (45: 8).

Likewise, Qiu (2003) sees a close relationship between e-learning and distance learning; the learner might be physically remote from the teacher and sometimes also temporally remote. In this method, educational courses and learning materials are delivered by using modern technology advantageously, enabling the students to learn the educational material and communicate with the teacher in spite of geographical distance (68: 14).

Along with e-learning, blended learning has emerged as one of the major learning methods of today which aims at integrating good aspects of the traditional teaching with the potential of modern technological advancements. According to Al-Gharib Zaher (2009), blended learning is using the familiar pedagogical methods in the light of new technology in classrooms. It features a blend of the two modalities of learning: face-to-face classroom learning and technology-aided learning via the Internet and other digital tools. In this learning context, the role of the teacher or faculty member shifts from that of a transmitter of information to that of a trainer, guide, facilitator and manager of various learning activities (2: 98, 99).

In this regard, a combination of the traditional method of teaching, in particular command method, and the use of e-learning techniques has the potential to increase the educational gain of the learner while making full use of the technological development without abandoning the significant social components that are linked with direct contact in the educational setting. These can then offer a balanced learning environment, using the strengths of both traditional instruction and technological learning concurrently.

Cooperative learning is an aspect that cannot be neglected when dealing with the social aspect of learning. Cooperative learning is one of the important contemporary instructional strategies that is considered as having an impact on interaction, idea building and cooperation between the learners in small groups where the learners learn from each other, support each other and teach each other in the process. By engaging in cooperative activities, students can share their experiences, talk about educational tasks, help each other and work together to reach common learning goals.

But traditional cooperative learning might not be able to provide enough integration with the modern technological resources which can improve the clarity, accuracy and effectiveness of the learning process. The criterion paper is one of the basic elements of cooperative learning that is important but may be difficult for some students to apply. In this paper the observation student should assess another student's work against a set of criteria. This could be challenging if it involves complex movement patterns that have multiple technical elements and need careful observation and understanding.

The instructional means must be capable of presenting the various components of the complex motor skills in an effective manner. The use of modern technology can help students see correct models of performance, repeat sections of the movement that are challenging, talk to other students about technical discussion, and break down individual aspects of the skill. Thus, any

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member of the cooperative group can think that he has certain information and that he is responsible to share that information with the rest of the group.

This learning also helps to build students' team working skills with various levels of abilities. Cooperation should not be hindered by individual differences among learners and the group should not lose its unity because of individual differences. Cooperative learning, however, offers a setting where different-ability students can help each other and collectively achieve shared learning goals. If e-learning is combined with cooperative learning, it can also help to improve positive attitudes toward the learning materials and motivate students to actively engage in learning.

Students who can work in organized groups might be better served by learning materials than those who work alone, in part because a group can provide discussion, explanation, help, information sharing and acceptance for the student whose learning or skills are below average. Cooperative education's point of view see, such an interaction enhances social relationship and stimulates students to accept and support each other.

Meanwhile, the current definition of e-learning has grown to mean much more than the delivery of educational material electronically. It has now evolved to include interactive, collaborative, social and human aspects. Learners are stimulated to be active, work together in small groups with the aid of modern technological tools and communication technologies. Using these tools, a rich learning environment can be developed where learners cooperate, communicate, share knowledge, jointly build understanding and perform joint tasks that are directly related to the learning material.

According to Hamad Al-Khalidi (2007), electronic cooperative learning is learning environments in which two or more different or diverse learners learn a particular learning subject by using the computers which are connected to a central computer or different networks. This type of learning aims to facilitate the learning process so that students can make new knowledge by communicating, cooperating and interacting with others (4: 46, 95).

Previous studies have shown that numerous researchers have highlighted the significance and effectiveness of integrating different teaching and learning methods with the use of e-learning in reaching learning goals. This incorporation can help to enhance learners' involvement, deepen their sense of belonging, enrich learning resources, and enhance learners' understanding and use of educational materials.

In the field of physical education, this is especially significant in the teaching of motor skills, where verbal explanation is not enough for learning. It is frequently based on observation, demonstration, repeated practice, immediate correction, feedback and the learner's understanding of the technical sequence of movement. Handball is one of the team sports which have a lot of simple and complex handball skills. The ability of players to learn, grow and acquire these skills in an appropriate manner will to a large extent determine the effectiveness of the individual players and the overall team.

The basic skills of handball, therefore, demand the use of teaching methods that focus appropriately on the learner and allow ample opportunity for observation, participation, practice, repetition, and correction. Modern teaching methods can help improve the quality and efficiency of learning and help learners reach certain technical standards in a suitable time. These

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techniques can also help to develop the learner's understanding of sport movements in their entirety as well as the intricacies of sporting actions.

Although there are many teaching methods and strategies used in physical education, and many studies, research papers and academic theses have been done over the years on the need to diversify teaching methods and break away from the command method of teaching, the command style is still widely used in physical education teaching. This was observed by the researcher as a middle school handball teacher, and has been cited by several other studies.

The command method may be used to suggest that it is useful and effective in specific teaching contexts. However, some of its disadvantages need to be considered, as its utility does not negate some of its shortcomings, especially in terms of the integration of modern technological tools. In recent development of education, it is acknowledged that teaching tactics should be continually improved and modernized, and that students' active participation in the teaching process should be emphasized. Learners should not be passive recipients of instructions, but should be active in the learning, practice, observation, evaluation and interaction process.

Based on these thoughts, the researcher came to the conclusion that a blended learning approach is suitable for use. Blended learning provides opportunities to leverage the best of both worlds of traditional learning and of e-learning, while minimizing some of the negative impacts that can arise from overuse or dependence on technology in educational contexts, especially on the social and emotional interactions between learners.

The modern approach to teaching considers the individual student, his or her ability, capacity, readiness and rate of learning. This could enable each student to engage in learning in a way that is suitable to his learning style and to become increasingly independent and responsible. The learner is thus motivated to be active, responsible, cooperative and positive in interacting with fellow learners and with the learning environment.

Therefore, blended learning has the potential to provide an educational space in which both face-to-face and technological pedagogical assistance can be used. It helps students get instruction from the teacher and also take advantage of multimedia, electronic resources, repeated demonstrations, interactive learning activities and cooperative learning. This combination could be especially useful in training of basic handball skills in which students require repeated visual and technical examples of the correct way to perform a skill along with hands-on instruction.

Importance of the Research

Several interconnected frameworks can be used to see the importance of the present research. Within the scope of researcher's study of the references available in periodicals, scientific research and information obtained through the international information network, this research was considered as one of the researches that mentioned the use of electronic cooperative learning and blended learning in the area of handball education. So, it could help in increasing the scientific knowledge available on the use of technology-assisted learning strategies in physical education and sport.

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Secondly, the study tries to bring and use modern teaching methods in the teaching process in general and in the teaching of handball skills in particular, especially blended learning. The study aims to blend direct instruction with electronic learning materials to create a flexible and interactive learning atmosphere that enables students to reap the advantages of both methods.

Thirdly, the research focuses on the use of modern technological tools in the educational process, which is aimed at achieving the intended educational results. Use of technological resources may provide multi-modal presentation of information and models of appropriate movement to the students which can enhance the learning process.

Fourth, the proposed educational approach aims to motivate students in learning basic handball skills by applying an organized and standardized educational approach. Giving students the opportunity to watch appropriate demonstrations of skill performance using technological media can facilitate the identification of key technical aspects of the skill, the ability to concentrate on challenging aspects of the skill, and an overall improvement in the quality of their skill performance.

Fifth, the study takes into consideration individual differences among learners by providing multiple sources and forms of educational content. There are multiple differences such as student ability, readiness, prior learning experiences, and rates of learning and blended learning can offer students extra opportunities to review and practice education to their needs.

Last but not least, the research could be an additional scientific achievement in the field of handball teaching and physical education, which discusses the use of blended learning and technology-supported cooperative education in teaching the basic motor skills. The results may be beneficial for researchers, specialists and teachers who are interested in creating innovative instructional approaches and enhancing the effectiveness of teaching and learning in physical education.

Research Objectives

The research objectives are to design a proposed handball learning program using blended learning and to determine the impact of the proposed learning program on learning basic handball skills at middle school.

Research Hypotheses

Statistically significant differences are found between the pre- and post-measurements of the experimental group in some basic skills of handball.

There are statistically significant differences between the control group pre and post testing results for some basic handball skills.

In some of the basic handball skills there are statistically significant differences between the post-measurement of the experimental group and the post-measurement of the control group.

Study Terms

Blended Learning

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Blended learning is a form of education that relies on an effective mix of different presentation tools, teaching methods and learning styles that support the learning process. It is based on integrating traditional methods, in which the student is present in class with the teacher, and e-learning methods (11: 1).

Research Methodology

The researcher applied quasi-experimental method which was suitable for the nature of the research, which was done through the pre and post measurement for the experimental and control groups.

The research population comprised the middle school students in Dhi Qar Governorate, Republic of Iraq, in the academic year 2024/2025.

The research sample included 30 students selected intentionally from middle school students in the Dhi Qar Governorate for the academic year (2024/2025) in the Republic of Iraq. They were divided at random into an experimental group of fifteen (15) students and a control group of fifteen (15) students. Furthermore, a group of fifteen (15) students were picked for exploratory study as depicted in Table (3) and in Figure (3/1).

(Table (3

.Description of the research community

No.	Sample				The program
	Sample type		number	ratio	
1	Primary study sample (30)	experimental group	15	33.33%	blended learning
2		control group	15	33.33%	Command style
3	exploratory study sample		15	33.33%	-
Research community			45	100%	

:Sample selection conditions

. They must not have previously learned handball skills

.Regular attendance of the experiment is not less than (80%) of the total lectures

To be proficient in using electronic means in students' experience with smartphones .

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Verifying the normality of the distribution of the total research sample

The researcher measured several anthropometric measurements in addition to the chronological age of the participants in the total research sample of forty-five (45) students from the experimental, control, and exploratory group to ensure homogeneity of the total research sample. The procedures were performed to ensure the uniformity and normativeness of the distribution of data by selected anthropometric variables and chronological age in the members of the total sample. The arithmetic means, medians, standard deviations (SD) and skewness coefficients were obtained for these variables to check the homogeneity of the participants which is presented in Table (4).

Table (4)

The arithmetic means, medians, standard deviations and skewness coefficients of the total research sample for anthropometric variables and chronological age are shown.

(n = 45)

Variables	Unit of measurement	Mean	Mediator	St.d	Coefficient of skewness
Chronological age	year	18.97	19.00	0.59	-0.14
Height	cm.	176.24	176.00	5.11	0.14
Mass	kg	72.23	70.00	11.56	0.58

(3-It is clear from Table (4) that the values of the skewness coefficients were between (The values of the skewness coefficients were found to fall within the range of (-3) to (+3), indicating that the measurements of the total research sample were distributed within the limits of the normal curve. This result confirms the moderation of the data distribution and indicates that the individuals of the total research sample were homogeneous with respect to the variables under consideration.

Physical Tests Under Investigation

The researcher followed a number of systematic steps in order to identify and select the physical tests appropriate to the nature and objectives of the study. These steps included reviewing relevant scientific studies, previous research, and specialized references concerned with physical fitness components and the tests commonly used to measure those components, while taking into account their suitability for the age group included in the present study.

In addition, the researcher conducted a survey of the opinions of experts and specialists regarding the most appropriate physical fitness components and the tests used to measure each of these components. Based on the results of the literature review and the experts' opinions, the physical tests adopted in the study were identified, as shown in Table (5).

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Table (5)

Physical Tests Under Investigation

No.	Physical fitness elements	Test name	Unit of measurement
1	Legs Power	Sergeant's vertical jump	cm.
2	Arm strength	distance medicine ball push	cm.
3	Agility	Zigzag running	second
4	Speed	30m from moving start	second
5	Compatibility	Numbered circles	second
6	Flexibility	forward trunk bend	cm.

Skill tests under consideration

:skill tests under investigation Researchers followed the following steps to arrive at the

Reviewing scientific studies and references that address skill tests that measure motor skills .and are appropriate for the age group under study

sts that measure Conducting a survey of the experts' opinions about handball skills and the te .(6) those skills. The skill tests were arrived at as shown in Table

(6) Table

Skill tests under consideration

No.	Motor skills	Test name	Unit of measurement
1	Shooting from the jump	Shooting from the jump	number
2	bouncing the ball	ball dribbling speed	second
3	Passing	scroll speed	second

:Verification of the psychometric properties of physical, skill, and technical tests

After arriving at the tests, the researcher found the scientific coefficients for the selected tests :their stability and validity, as follows to verify

The validity coefficient will be calculated for the tests under investigation.Validity coefficient for the tests under investigation will be computed.

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The researcher employed the discriminant validity method for verifying the validity of the tests examined, which is the ability of the test to discriminate between individuals with different levels of performance. The researcher did this by comparing the performance of two groups with varying levels of performance.

The first group was the non-distinguished group which included members of the exploratory research sample, and the second group was the distinguished group. This comparison was conducted to determine if the tests selected were able to detect clear and statistically significant differences between those with different physical, skill and technical levels.

The following procedure was used as a measure of the validity of the tests used in the study. For each of the physical, skill and technical variables investigated, the significance of the differences between the distinguished and the non-distinguished groups was therefore computed. Table (7) presents the results of this comparison.

Table (7)

The results over the Physical, Skill, Technical Variables Under Investigation indicate that there were significant differences between the Exploratory Group (Non-Distinguished Group) and the Distinguished Group. (n1=n2=15)

Variables			Unit of measurement	distinct group-Non		The featured group		value (T)
				Mean	St.d	Mean	St.d	
Physical	Leg Power	vertical jump	cm.	64.47	9.82	90.67	30.99	3.122
	arm strength	medicine ball throw	cm.	470.00	35.86	510.00	30.71	3.28
	agility	Zigzag running	second	7.36	0.65	6.16	0.46	5.85
	speed	m from moving30 start	second	3.57	0.79	2.89	0.39	2.99
	Compatibility	numbered circles	second	5.41	0.99	4.04	0.65	4.48
	flexibility	forward trunk bend	cm.	-5.73	5.01	-13.87	2.95	5.42
	Scoring		number	2.40	0.63	6.73	1.16	12.68
	Ball dribbling		second	11.39	0.77	8.27	1.44	7.41
	Passing		second	11.62	1.18	9.09	1.01	6:30

T C (28, 0.05) = 2.05

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that there are statistically significant differences between the (7) It is clear from TableFor the measurements under investigation, the calculated values of the (t) test were higher than the tabulated values at the significance level (0.05) for the groups of Exploratory, Distinguished and non-distinguished. This means that there are statistical significant differences between the measurements of the group of distinguished students and the group of non-distinguished students in all tests investigated. The results obtained validate that the tests selected were able to effectively discriminate between different levels of performance. Thus, the tests proved to be valid at the proper level and were judged to be suitable for the physical, skill and technical traits for which they were developed.

The reliability coefficient of the tests under investigation are calculated as follows:

The researcher applied the test-retest method to obtain the reliability coefficients of the tests that were studied. The exploratory research sample comprised of 15 people outside the main study sample and from the same research population.

The exploratory sample was tested twice with a time interval of seven (7) days between the two tests. The second application was made under the same conditions as the first application to keep the test conditions consistent and to prevent external factors from affecting the results.

The correlation between the first and second applications was then examined for stability and consistency of the tests over time. The reliability coefficients for the tests tested are given in the following Table (8):

Table (8)

The results are presented in the form of reliability coefficients between first and second application of the tests under investigation. (15 =n)

Variables	Tests		Unit of measurement	First application		The second application		value (r)
				Mean	St.d	Mean	St.d	
Physical	Leg Power	vertical jump	cm.	64.47	9.82	70.20	10.36	0.806
	arm strength	medicine ball throw	cm.	470.00	35.86	481.33	35.02	0.981
	agility	Zigzag running	second	7.36	0.65	6.98	0.66	0.823
	speed	m from moving 30 start	second	3.57	0.79	3.49	0.64	0.743
	Compatibility	numbered circles	second	5.41	0.99	5.55	0.98	0.889
	flexibility	forward trunk bend	cm.	5.73-	5.01	5.00-	5.39	0.839
	Scoring		numbe	2.40	0.63	2.93	1.10	0.729

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		r					
	Ball dribbling	second	11.39	0.77	10.66	0.81	0.845
	Passing	second	11.62	1.18	10.87	1.19	0.655

r c (13, 0.05) = 0.514

The results summarized in Table (8) show that there was a significant relationship between the results of the first application of the tests investigated as compared to the second application on the exploratory study sample. The correlation coefficient (r) was calculated and found to be greater than the tabulated value at the 0.05 significance level with the corresponding tabulated value. This shows good agreement between the outcomes of the two applications. In light of this, the results of this study support the stability and reliability of the test scores in the event that the tests are administered again, under the same conditions and procedures, which indicates that the tests investigated have an adequate level of reliability for the current research.

gramsSuggested pro

their general in Despite the multiplicity of course design models, they are very similar framework, as they are almost always devoid of the following stages: (analysis, design, production, experimentation, and evaluation); however, they differ in the tasks specific to eve. The previous models can be each stage, according to the goal that the model seeks to achi and the educational program used to come up with a proposed model that suits the proposed command program (the control group), in an attempt to combine the advantages of each sists of five main stages: (the analysis model and avoid its shortcomings. The program con the -the initial experimentation stage -the production stage -the design stage -stage .(implementation stage

.Formulating educational objectives

be achieved upon completion General objectives: These are the objectives that are hoped to .1 of the program study. They are characterized by comprehensiveness, and the process of determining the course objectives is considered one of the most important steps in preparing rning programs consist of (8) main programs. The general objectives of the four lea so that each , lectures (16) objectives. The content of each program has been divided into .general objective has a module that seeks to achieve it

arning objectives Specific (Procedural) Learning Objectives: Procedural or specific le .2 express attainable goals that occur through direct exposure to education. Their expressions represent more specific learning content and represent measurable outcomes that the learner content related to these objectives. The is expected to acquire after studying the educational researcher formulated procedural objectives for each module. The researcher then presented these objectives in their initial form to a number of experts in the field of handball, curricula der to be guided by their opinions. The final form of the learning and teaching methods in or .objectives for the four learning programs was reached

.Identify educational content elements and group them into units

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The researcher identified the content elements to achieve the desired educational goals of the educational program, as the researcher derived these elements from the goals that were topic and goal. presented previously. The content of these units changes according to each The following is a model of the elements of the first topic (teaching the skill of holding, .(9) receiving, and feeling the ball), as shown in Table

.rogramsTable (9) details the content elements included in the first lecture of the electronic p

Content elements for each lecture	Tasks and activities performed by the student	learning objects
General objective	General objective (teaching the skill of (holding, receiving and feeling the ball	.text still image
Cognitive objectives	the general objective of the activity Read - and the educational objectives (cognitive, based, and affective), with an image -skill .indicating the objectives	
Skill objectives		
Affective goals		
Information and knowledge	View skill images -	video
explanation Skill	Read the technical notes for the - performance, with a video explaining these .notes in sign language	.text video
Educational activity	There are gradual exercises for the educational activity, then the applied xercise, activity. The student reads the e watches the picture that indicates it, or .for each exercise -watches the video	.text still image video

Production stage

In the Productionand Construction phase the educational materials and media that were , design phase were obtained, through acquisition from what was identified and selected in the available, modification from what was available, or new production. These elements were then digitized and stored, and then the program was written and the prepared scenario was :rding to the following stepsimplemented acco

.Access media, resources, activities, and learning objects

Educational resources for producing multimedia and learning objects were identified. This :melystage includes a number of procedures and programs used in the production, na

) Writing texts .1Txt :(Microsoft Word 2010 was used to write texts for the objectives, .content elements, educational activities, and exercises

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Still images .2: The still images were obtained through search engines on the World Wide ion to scanningWeb, in additsome .scientific books on handball

Video clips : The researcher filmed the exercises for the educational activity and the applied De Qar - of the Faculty of Physical Education year activity for handball students in the fourth ho were chosen as a model for performance for individual, pair, and group w , University .exercises

.Modify media production, resources, activities, and other components

:The researcher modified the previous files with the programs specific to each type as follows

) ll imagesSti .1Image Most of the images were processed to meet all technical and :( ) educational specifications in terms of color and size, using the programAdobe Photoshop Cs5. Middle Eastern Version .(

Video clips : The researcher processed, segmented, and arranged the raw footageusing the Video Cutter program .to make it suitable for display

.Converting media elements into digital form and storing them

xts, images, and animations were In this step, the course content was programmed, and te .activated, taking into account simplicity and avoiding excessive distractions

: Evaluation stage

In this evaluation stage, the researcheradjusted the programs, ensured their integrity, and to make them suitable for final testing. The evaluation aims made the necessary modifications :to

.Verify the appropriateness of the units to the objectives and sample characteristics

Identifying the problems that the researcher may encounter during the application in order to .them address

.The clarity of images and videos, their presentation, and the accompanying text

The researcher gains experience in applying the experiment to ensure that it is finally .conducted well

:Applying the program on a small pilot sample

were presented to a sample of students from the pilot group, to identify The program modules any difficulties they might encounter during the actual implementation of the program, and to attempt to overcome them. After conducting the initial experiment with the students, a the program presentation process, during umber of important observations were identifiedn .and these were addressed during the main experiment

: Use stage

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Use phase is the result of the previous phases, in which the researcher applied the learning as it includes the basic ,(experimental group to the basic study sample (the programs in order to achieve the study's year middle school students-fourth experimental procedures on .goal, which is to teach some offensive skills specific to handball

:undations for developing proposed educational programsElements and fo

The researcher conducted a survey form for experts regarding the elements and foundations year middle -fourth of the proposed educational programs for teaching basic handball skills to :and the results were as follows -Attachment (2) - school students

weeks, each week an educational unit (16) Program duration : two months distributed over in The group on minutes for each educational program, where the application was (45) of ,one day in a row

Study Experience Application

:following tables The researcher has coordinated the research experience as in each of the

Table (10)

Time distribution of the procedures for implementing the basic experiment

Measure ment	from	to	(Actions (variables
-Pre measure ment			Physical and skill tests, and homogeneity and .equivalence of research groups
Basic experien ce			Over a period of (8) weeks, including (16) lectures, each lecture took (45) minutes to implement, as the groups were taught in the .place to avoid the impact of variables same
Dimensi onal measure ment			After completing the experiment for skill -tests, under the same conditions as the pre .test

:Statistical processing

In the statistical processing of the data in this study, the researcher used the Statistical Packagefor Social Sciences (SPSS :version (22), using the following parameters (

arithmetic mean

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The mediator

Standard deviation

skewness Coefficient of

n's correlation coefficientPearso

test for two related samples of data-t

test for two independent samples of data-t

Results

The results of the first exam

-The first hypothesis states that: There are statistically significant differences between the pre . measurements of the experimental group in some basic handball skills-post and

(Table (11

measurement of -measurement and post-The significance of the differences between the pre .the first experimental group (mixing) in the variables under investigation

(n=15)

Tests	Unit of measurement	Pre-test		Post-test		T) v) alue	Effect size $\eta 2$
		Mean	St.d	Mean	St.d		
Scoring	number	1.93	0.80	5.33	1.11	12.47	0.917
Ball dribbling	second	11.96	0.79	9.04	0.68	9.95	0.876
Passing	second	11.21	0.75	9.86	0.93	6.21	0.734

T C (14, 0.05) = 2.14

As shown in the results presented in Table (11), the computed values for the (t) test were between (6.21) and (16.10), which means that there are statistically significant differences between the variables studied. To know the practical significance of the effect of the independent variable on the dependent variable, the effect size was calculated by using the eta squared (η^2) that gives an indication of the magnitude of the effect of the independent variable on the dependent variable.

The eta squared (η^2) values calculated were between (0.734) and (0.949). These values are very large, reflecting a significant impact of the independent variable on the dependent variables

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examined. This indicates the efficacy of experimental treatment applied and the measurable changes it produces.

Table (12)

The Variables Under Investigation are presented as percentages of improvement between the scores of the first experimental group (Blended). (n=15)

Tests	Unit of measurement	Pre mean	Post mean	The differences	improvement rate
Scoring	number	1.93	5.33	3.40	176.17
Ball dribbling	second	11.96	9.04	2.92	24.41
Passing	second	11.21	9.86	1.35	12.04

:Show the results of the second exam

-hypothesis states that: There are statistically significant differences between the pre second . measurements of the control group (commands) in some basic handball skills-and post

Table (13)

for the control group in test-test and post-The significance of the differences between the pre .the variables under study

(n=15)

Tests	Unit of measurement	Pre-test		Post-test		(T) value	Effect size $\eta 2$
		Mean	St.d	Mean	St.d		
Scoring	number	2.40	0.83	4.40	0.74	8.37	0.833
Ball dribbling	second	11.50	0.94	10.70	0.92	5.83	0.708
Passing	second	11.62	1.28	10.33	0.82	6.96	0.776

T C (14, 0.05) = 2.14

From the values obtained in the Table (4/7), it is clear that the calculated values of the (t) test vary between (5.25) and (10.25) which shows that there is difference in the variables under study. To assess the practical significance of the independent variable effect on the dependent variable,

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the effect size was computed using eta squared (η^2) which shows the magnitude of the effect of the independent variable on the dependent variable.

The coefficient of eta squared (η^2) computed ranged from (0.663) to (0.882). The values obtained are very large, showing a very significant influence of the independent variable on the dependent variables included in the study. This finding is based on the size of the change in the performance of the control group on the variables being investigated.

Table (14)

This section provides an analysis of the percentage of improvement between the scores from the control group and test results.This section presents an analysis of the percentage of change between the score of the control group and the test results. (n=15)

Tests	Unit of measurement	Pre mean	Post mean	The differences	improvement rate
Scoring	number	2.40	4.40	2.00	83.33
Ball dribbling	second	11.50	10.70	0.80	6.96
Passing	second	11.62	10.33	1.29	11.10

Presentation of the Results of the Third Hypothesis

The third hypothesis of the study states that there are statistically significant differences between the post-test measurements of the experimental and control groups in selected basic handball skills.

To verify this hypothesis, the researcher compared the post-test results of the experimental group with those of the control group in the basic handball skills under investigation. This comparison was conducted in order to determine whether the differences between the two groups reached the level of statistical significance and to identify the effect of the experimental treatment on the performance of the experimental group compared with the control group.

Table (15)

Tests	Unit of measurement	experimental group		control group		value (T)
		Mean	St.d	Mean	St.d	
Scoring	number	5.33	1.11	4.40	0.74	5.62
Ball dribbling	second	9.04	0.68	10.70	0.92	4.89

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Passing	second	9.86	0.93	10.33	0.82	4.94

that there are statistically significant differences at the level of (0.05) 15 It is clear from Table in all variables of the dimensional measurements of the experimental and control groups , as at the level the calculated (t) values were all significant and greater than their tabular value . of (0.05) in favor of the experimental group

(16) Table

measurements in (skill and technical) variables for the (-Improvement rates between (post research groups

(15= n1=n2)

Tests	Unit of measurement	Change Ratio	
		experimental group	Control group
Scoring	number	176.17	83.33
Ball dribbling	second	24.41	6.96
Passing	second	12.04	11.10

Discussion

The outcome of the first hypothesis is discussed.The result of the first hypothesis is discussed.

The results showed that there are statistically significant differences at the level of significance (0.05) on all the variables under study within the experimental group. The values of t calculated were in the range (6.21) to (16.10) which are all significant statistically. The differences were in favor of the post-measurement of the experimental group that was taught using the blended learning method. Furthermore, the percentage of improvement was found to be within the range (12.04%) to (176.17%) in all the variables studied in favor of the post measurement.

These results demonstrate that the use of the blended learning method in developing offensive handball skills was effective and had a positive influence on the students' learning and skill performance. This improvement is due to several aspects that are linked to the qualities and benefits of blended learning.

The blended learning method helped the teacher and the learners to make good interaction in and out of the classroom; and among themselves. This kind of interaction was very important in upgrading students' offensive handball skills. In the process of applying the blended learning model, students were faced with a diverse and stimulating learning process where various sensory

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receptors were activated such as auditory, visual, sensory, and motor receptors. The activation of these senses simultaneously facilitated the receiving of the information needed for perception and created a more accurate representation of the motor performance required, thus positively impacting students' motivation to learn (7: 58).

Student self and cooperative learning is another aspect of blended learning. The technologies included in the blended learning environment offer learners the chance to learn independently of others, reading printed or electronic materials, but also learning with others when learning via networks, electronic communication or learning activities involving video. This diversity enables students to gain from various learning experiences based on their personal learning needs and their abilities.

In addition, the use of multimedia and direct interaction in class can improve the quality of learning, as well as enhancing creativity. The traditional classroom setting and technological and electronic interaction offers instructional components such as practice, real-time, and feedback, videos, images, illustrations, audio commentary, written materials, and stimulating questions. All of these cater to the various learner senses and motivate students to maximise their skills and abilities.

Blended learning should be designed based on the students' needs to enhance their motivation in achieving educational goals, Al-Gharib Zaher (2009) suggested (2: 98). This principle was taken into consideration by the researcher during the design of the blended learning program. In the same manner, Enaam Haider (2009) has also stated that blended learning is one of the effective interactive learning environments which can attract the students' attention and make them share opinions and experiences. It is also a way to incorporate theory and practice, to develop higher order thinking and to include individual differences of learners (3: 191).

The present study findings are consistent with those reported by Essam El-Din Shaaban (2016), Ruqayya Hamza Kanawi (2016) and Nashwa Ahmed El-Sayed (2013).

The results thus confirm the first hypothesis (there are statistically significant differences between the pre- and post-measurements of the experimental group in some basic handball skills).

The results of the second hypothesis are discussed.The results of the second hypothesis are discussed.

The results indicated that for the control group, there was a statistically significant difference between the significance level (0.05) in all the variables studied. Calculated (t) values were between (5.25) and (10.25) with all these values significant statistically. The differences were in the favour of the post-measurement of the control group which was taught by the command method.

The researcher believes that the improvement of the control group is due to the fact that the teaching method used is traditional teaching method which is basically verbal explanation, demonstration of the correct model of performance, practice, repetition and correction of mistakes. The gains in the basic skills being measured, however, were somewhat small when compared with those of the experimental group.

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The researcher's view of the extent of improvement from the traditional approach could be related to the size of the class compared to the short length of time allotted for physical education class. This may be a challenge for the teacher and could decrease the teacher's ability to give individual correction and feedback to students. As a result, there is insufficient time for students to determine and correct their errors and develop a high level of skill mastery.

The positive outcomes that the control group had also could be attributed to the verbal explanations by the students' handball skill level of the skills and the presentation of correct performance models by the teacher and/or by distinguished students who are proficient in handball. This was followed by practice of the targeted skills in which the teacher was trying to find and correct the errors in the learners' performance.

However, another possible reason for the improvement of the control group is that the method is a traditional teaching method and is used in other subjects. Pupils might therefore have acquired an effective response to such teaching and put in extensive efforts in order to achieve success in learning outcomes.

Students also received educational support from the prescribed textbook, further developed with practical exercises learning the skills being taught, with explanation of the educational steps and technical aspects of the moves, and with sequential illustrations of the targeted motor skills. While these materials may have helped to improve the gains in the control group, the gains for the experimental group remained higher.

This interpretation is related to Awatif Sobhi (2006) which pointed out that the traditional approach encompasses verbal explanation, demonstration of exemplary performance, correction of mistakes by the teacher, and practice and repetition by the student. The procedures give learners opportunities to practice skills and help to make them more efficient (11: 53).

Consequently, the second hypothesis is confirmed as there are statistically significant differences between the pre- and post-measurements of the control group in some basic handball skills.

The results of the third hypothesis were discussed.The results of the third hypothesis were discussed.

The results showed that there were significant differences in all the variables studied at the 0.05 level in favour of the post-measurements of the experimental group applying the blended learning method.

The results can be attributed to some of the benefits of blended learning. The electronic learning environment and Internet provide a suitable base for the establishment and development of an effective collaborative learning environment. This will foster social aspects of cooperative learning, which use different technological tools that promote cooperation and can be effectively used in learning process.

Blended learning also enables students to get feedback and evaluation from other students in the group. It creates opportunities for interaction and positive interdependence amongst learners and allows for individual responsibility, where each learner is responsible for learning content and for contributing effectively in the process of achieving the objectives of the group's learning.

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Afat Mustafa Al-Tanawi (2002) showed that blended learning helps sharing new knowledge in relation to the educational content among the group members and enables the learners to benefit from the group's knowledge production. There is also a need to learn and communicate information which is related to communication theory. This can be seen when students watch and act out the activities of other students by using electronic devices (mobile phone) and educational content through other sources. The discussion and comment on these resources can facilitate sharing of experiences, knowledge, ideas and viewpoints between groups, thereby significantly supporting learning (10: 172).

Blended learning is the combination of the advantages of traditional learning with those of e-learning. This is viewed as a pivotal use of modern communication technologies in learning as it is based on a technological tool, computer and the internet. These technologies have made a big contribution to the development and spreading of blended learning. In addition, blended learning uses a variety of media and uses the World Wide Web, which has a fast flow of information in different fields, to help students understand and comprehend learning content at their own levels and at their own times.

Blended learning may also help to enhance a number of social and psychological factors in the learning process. Through joint activities and positive relationships between students, cooperation can be enhanced, mutual relationships can be developed, students' self-appreciation can be raised, and positive attitudes toward school can be fostered. Positive interaction and dependency of learners also play a role in shaping students' attitudes towards their teacher and fellow students, and motivate them to strive for common learning objectives.

Abdullah bin Abdul Aziz Al-Moussa (2002) also asserted that employing a variety of audio-visual teaching and clarification techniques could render the educational process more interesting and enjoyable, and less tedious than traditional pedagogy. The application of these technological tools can also help to speed up learning time and reduce learning effort in the learning process. Further, opportunities for dialogue and discussion, quick and immediate assessment and correction of errors may help build the technical skills of various skills. These also consider individual differences of learners by giving them more independence in accessing the technological devices, and offering access to various information and knowledge sources from electronic media as a facilitator of accessing educational content (8: 79).

Thus, the advantage found in experimental group may be the benefit of the face-to-face teaching and electronic learning. Multiple opportunities for students to interact, collaborate, observe, provide feedback and access to a variety of information sources in a blended learning environment positively impacted the development of the basic handball skills under investigation.

The third hypothesis is accepted because the results of the present study and the discussion presented below indicate that there are statistically significant differences between the post-measurements of the experimental and control groups in some basic handball skills.

Conclusions

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Following conclusions have been drawn from the research procedures, results obtained and statistical analyses undertaken:

1- The blended learning approach positively helped the level of students' performance in the basic handball skills in the experimental group. The application of this method created an educational environment that promotes skill acquisition and helps students' practical skills to develop.
2- The command method also had a positive effect on the level of students' performance of the basic handball skills of the members of the control group. This indicates that the traditional teaching method had a positive role in supporting the learning and development of the targeted skills.
3- Learning through the blended learning method, according to the educational program applied in the study, had an effective impact on improving the level of skill performance. It can be concluded that the experimental group implementing the blended learning approach outscored the control group in most of the rates of progress for the skill variables which were investigated, in view of the percentage of improvement rate that was obtained in the experimental group.
4- Using electronic educational resources (text, sound, image, music, and video) instead of conventional paper-based educational resources, and directions and guidance from the teacher helped to motivate beginners in learning. These tools also accounted for the variability in learners and offered feedback from a variety of sources that facilitated the learning process and helped to enhance the ability to perform the skill.

Recommendations

Recommendations

Based on the findings of this research and the results and conclusions, the researcher suggests the following:

1- The application of the proposed educational program is in the form of blended cooperative learning in handball skill learning that has a positive effect on improving learning in the handball skill which is able to develop the skills of handball learners.
2- Conducting sports education education programs using electronic and technological methods to help students make the maximum use of modern technological devices and stay abreast of the developments in the field of sports education. These programs can also help to cultivate qualified physical education teachers who can face the future challenges in education and technology and meet the evolving needs of the educational process.
3- Continual research and scientific studies on how to apply electronic cooperative learning methods in the field of teaching in school and college level. This can be a part of constant improvement of the educational process, improvement of the use of modern teaching methods and a help to catch up with the educational and technological progress in developed countries.

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Vol (7) No (2)
doi: 10.31942/jess.v7i2.17444

References

- Psychology of (2007) .Mahamid, Shaker Aqla-Zghoul, Imad Abdul Rahim, and Al-Al Masirah for Publishing, Distribution and Printing, -Classroom Teaching, Dar Al . Amman, Jordan
- learning from application to professionalism and -Gharib Zaher Ismail (2009) : E-Al . Kutub-quality, Cairo: Alam Al
- Blended Learning in Medical Colleges. Journal of : (Enaam Abbas Haider (2009 Engineering and Technology, Vol. 27, No. 5, Department of Medical Computing, .College of Medicine, University of Baghdad
- Khalidi (2007): The role of local and global computer networks-Hamad bin Khalid Al in enhancing cooperative learning (a proposed vision). Journal of the Future of Arab .(Education, Qatar, (46), (95
- Ruqayyah Hamza Kanawi (2016) impact program Educational Using style Integrated on to learn skill aiming from jump And collection Cognitive ni ball hand For students college Education Sports At the University Karbala , Master's Thesis, Faculty of .Physical Education, Mansoura University
- fair quality Abdul Aziz Muhammad (2016): Impact Use learning Cooperative on level performance some Skills icBas in basketball And some values Ethics For students The episode Second from education Primary , College Education Sports Benin-University Zagazig
- -Faqih (2011) Blended Learning: Educational Design -Allah Ibrahim Al-Abdul Thaqafa for Publishing and Distribution, -Thinking, Dar Al Innovative -Multimedia .Amman
- learning: its concept..., -Musa (2002) "E-Abdullah bin Abdul Aziz Al .characteristics..., benefits..., obstacles" A working paper submitted to the Future Symposium , King Saud University.
- Ali Hassan (2016): Effectiveness Program Educational Using Shaaban Religion ssamI And Physical Academic learning And Attributes time The mixed on learning strategy Disc , Faculty of Physical Education, Assiut University, Throw In Performance Level . (c Journal of Physical Education and Sports Sciences, Issue (76), Part (2Scientifi
- Tanawi. (2002). Teaching and Learning Methods and Their -Afat Mustafa Al Egyptian Library, Cairo, Arab Republic -Applications in Educational Research , Anglo . of Egypt
- Ala, Political Education for Youth and the Role of Physical -Awatif Abu Al .Nahda for Printing and Publishing, Cairo-Education, Dar Al
- Sayed (2013): The effectiveness of using blended learning on the -Nashwa Ahmed El y of Physical Education, shot put competition for female students of the Facult Zagazig University, unpublished doctoral dissertation, Faculty of Physical Education, .Zagazig University
- Martin, H Robin (2004): How are 6th grade students cooperative behaviors affected after instruction in cooperative activities in physical education , Internet articles,
- Qiu, H. (2003). Effectiveness of e-learning. // A:page \Files\Slide…1.htm93

ISSN: 2798-7345 (online)
ISSN: 2830-2648 (print)

Vol (7) No (2)
doi: 10.31942/jess.v7i2.17444

JOURNAL OF EDUCATION AND SPORT SCIENCE (JESS)
http://publikasiilmiah.unwahas.ac.id/index.php/JESS

- Taradi , K. Taradi , M. Radi, K. & Pokrajac, N. (2009). " BlendingProblem -Based Learning with Web Technology Positively Impacts Student Learning Outcomes in Acid- Base Physiology ."Advan .Physiol .Edu.
- Taylor, R. (2007). A blended online instructional approach to physical education instruction: A combination to enhance student cognitive and physical ability Retrieved from a ProQuest Digital Dissertations.