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## The effect of an educational curriculum on various educational environments to learning and developing the accuracy of the forehand and backhand tennis shoots for students

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### Abstract

The research is important for developing a curriculum that incorporates a set of exercises for the technical stages of learning the forehand and backhand strokes in tennis in a variety of educational settings, as well as the opportunity to view the exercises in this way within image and video modeling to improve the learner's capacity to comprehend and realize the stages of the skill and to practice the exercises mentally to become more proficient. While the study's goals included figuring out how different learning environments affected students' ability to learn and practice the forehand and backhand strokes in tennis, they also included figuring out how the two groups differed in their approaches to teaching these skills to youngsters. The study made the assumption that the two research groups would differ statistically significantly. On how the educational curriculum affects various educational settings where students may master the forehand and backhand tennis strokes.

**Keywords:** Educational curriculum, various educational environments

### 1. Introduction

The teaching process is nothing but a gradual, regular and purposeful process that creates a clear impact on the learners. This process is characterized by interactive and mutual dialogue between the teacher and the student, in addition to determining the subject we want to teach, as well as creating all the conditions, capabilities and resources that are intended to develop, enrich and enrich this subject. On the condition that the teaching and learning environment is controlled to achieve the desired goals of the teaching and learning process. There are various opinions that explain this process, including that the learning process must be based on three main rules and pillars, which are the teacher, the student, and the educational material. There are those who add the educational environment as the basis on which these materials will be collected and mixed with each other to produce a model educational process if the conditions of the teaching process are taken into account.

One of the most important steps of the educational process is to make the education process directed towards special goals. This is done in light of the organized and sequential procedural steps during the implementation of the lesson plan drawn up by the teacher, especially since it is not just for implementation, as it is a prior planning process that addresses the extent of setting goals. Educational goals and their achievement, and the suitability of the content in light of these goals and the environment used, and unifying and employing human and material resources with little error or coincidence. Following the method of learning in diverse environments helps the learner to acquire the skill faster than other learners because in this method the learner will be able to review the theoretical and practical material to perform the effectiveness at any time that he has the opportunity to do so. Unlike the rest of the types that may be determined by the lesson.

Since the game of tennis is an individual game, and the skill of the forehand and backhand in particular is the subject of research, it is one of the basic and important skills for learners at the beginning of learning, or which requires continuous repetition of performance.

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Therefore, it needs various environments to demonstrate its stages and observe its motor performance constantly and focus on it for more than one repetition. Through the possibilities that this type of diverse educational environment provides, it is possible to focus on all parts of the skill continuously, repeatedly, and as needed, which will reflect positively on learning the skill of the forehand and backhand shot in tennis for the students.

In order to increase the learner's capacity for understanding and realization, the researcher made a serious effort to create a curriculum that includes a set of exercises for the technical stages of learning the forehand and backhand shot in tennis in a variety of educational settings. The curriculum also included the option of viewing the exercises in this way through image and video modeling. The greatest results will be obtained if students master the forehand and backhand shots in tennis at this level, as the skill-building phases and mental practice of the drills will be the optimal states for the learning process to reach the stage of cementing the technical performance of the skill.

**1.1 Research Problem**

The process of learning and teaching in universities and higher education institutions, whether inside or outside them, requires diversity in educational environments to deliver information about the skill to be learned to students. Therefore, the hope lies in the presence of diverse educational environments, as their use adds more excitement and excitement to comprehensive learning and teaching. Yes, there are possibilities to adapt and suit these environments in light of the educational and pedagogical goals pursued by university education, and at the same time it reduces the burdens related to time and management on the shoulders of the teacher. In the educational process, the teacher makes a lot of efforts to support the expansion of the field of electronic information that will change and develop the infrastructure of the rules and foundations of learning and the ways, means, and means of disseminating it, and develop the means from being traditional education to teaching using diverse environments, so that classrooms and virtual environments become widespread across different areas. In geographically distant areas.

The researcher was inspired to try to invest in the educational environment offered by the college through. Its electronic educational platform after noticing that the use of blended learning as a curriculum approved by the Ministry depends primarily on electronic and in-person education and the attempt to link them. The researcher has experience teaching racket games at the College of Physical Education and Sports Sciences/University of Babylon. It was created based on several scientific and research investigations connecting three educational settings, and which will ultimately be a cogent curriculum based on different settings to teach kids the forehand and backhand shots in tennis.

**1.2 Research objective**

1. Determining how the educational curriculum affects distinct learning contexts where students learn and

develop their forehand and backhand tennis skills.

2. Differentiating between the two groups while teaching tennis players how to execute forehand and backhand shots

**1.3 Research hypotheses**

1. There are statistically significant differences between the two research groups when looking at how different educational settings and the educational curriculum affect students' ability to master the forehand and backhand shots in tennis.
2. There are statistically significant differences between the two research groups and in favor of the experimental group in learning the skill of the forehand and backhand shots in tennis for students.

**1.4 Research fields**

**1.4.1 Human field**

Students enrolled in the third stage at the University of Babylon's College of Physical Education and Sports Sciences for the academic year 2021–2022.

**1.5.2 Time field**

From 20/11/2021 to 25/1/2022.

**1.5.3 Spatial field**

The College of Physical Education and Sports Sciences at the University of Babylon has outdoor tennis courts.

**2. Research methodology and field procedures**

**2.1 Research methodology**

The researcher employed the experimental technique by creating (two equal groups) to fit the nature of the study since many phenomena can only be examined via a method that is consistent with the nature of the issue to be researched. The nature of the issue determines the approach the researcher opts for in order to reach conclusions.

**2.2 The research community and its sample**

In order to carry out the primary study experiment, the researcher divided the population into two divisions (D, C), totaling 85 third-year students from the College of Physical Education and Sports Sciences at the University of Babylon. In terms of the study sample, the researcher divided the research population into the control and the experimental groups using a simple random lottery with (25 students) for each group. The researcher kept 12 students for the experiment and eliminated any others who failed the first tennis stage, club players, injured players, and absent player's reconnaissance.

**2.3 Equivalence of the research sample**

As shown in Table (1), the researcher discovered equivalence for the research sample by comparing the pre-test results for the two research groups using the t-test for independent samples in the dependent variable of the research, which is the technical performance of the forehand and backhand stroke skill in tennis:

**Table 1:** Shows the test of Homogeneity Levin, Sig level, calculated t value, Freedom Degree and Sig level

Tests	Homogeneity Levin	Sig level	Calculated t value	Freedom Degree	Sig level
Technical performance of the forehand and backhand tennis skills	1.518	0.224	0.343	48	0.737

At a significance level  $> (0.05)$  and a degree of freedom (48) By analyzing Table (1), we notice the equality of the two groups because the significance level of the values calculated for the t-test for independent samples is  $> (0.05)$ .

## 2.4 Research tools and devices used

What is meant is the means or method by which the researcher can solve his problem, whatever it may be, such as tools, data, samples, or devices, and therefore he used many of them in order to achieve this:

### 2.4.1 Methods of data collection

- Arab and foreign sources.
- Tests.
- Observation.
- Information network (Internet).

### 2.4.2 Tools and devices used in research

- One (1) Lenovo laptop.
- One (1) SONY camera.
- Camera stand (1).
- Tennis courts in the college.
- Wilson tennis rackets.
- Dunlop tennis balls.
- Measuring tape.
- Floppy disks (CD+DVD).
- Chinese-made electronic stopwatch (1).

## 2.5 Search procedures

### 2.5.1 Test for assessing the forehand and backhand technical skills in tennis

**Name and purpose of the test:** Evaluating the technical performance of the forehand and backhand skills in tennis.

**Tools:** Tennis rackets/tennis balls/photo camera.

**Procedures:** The pupil stands on the base line at his preferred distance once given the all-clear. The kid gets one minute to alternate between front and back kicks after receiving the ball from the coach or a teammate. While the students practice the skill, the researcher notes their technical performance for each of their three attempts.

**Registration:** After completing the tests and photography, the researcher presents the students' performance attempts to the experts, evaluates the best attempt for each student, and approves the results of the experts' evaluation.

**Choosing the skill tests:** The researcher chose the tests for the forehand and backhand shots approved by the International Tennis Federation (2004).

**Test name:** Accuracy of depth of forehand and backhand shots in tennis.

**Test Objective:** To evaluate the depth accuracy of forehand and backhand shots in depth.

\*Highest possible score = 40 points.

### Procedures

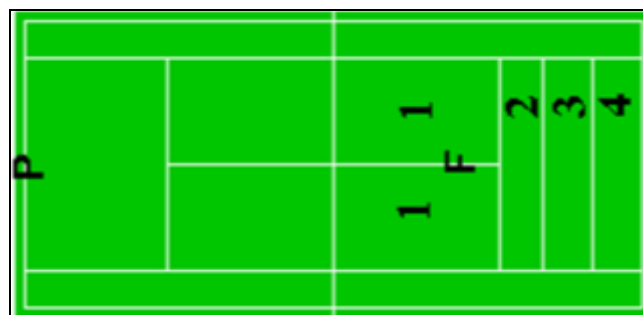
1. You must confirm that participants have finished the warm-up and are prepared for the exam before the test begins.
2. This test is designed to measure the players' assessment

of control, depth and strength of strikes.

3. The player gets double the points if the second bounce of the ball is behind the force measurement line and as indicated in the drawing.
4. The player gets points on singles court tennis.
5. The player hits (10) alternating balls, one of which is a forehand and the other is a backhand, and so on until (10) balls are completed.
6. Based on the location where the ball landed on the first bounce for the depth of the strike and the second bounce for the intensity of the strike, evaluation points are determined.
7. The assisting player must throw the ball in the middle of the area between the service line and the base line, as in the drawing. The assisting player or the hitting player has the right to reject an irregular ball that falls outside the correct area.

### Calculating strike depth accuracy points

1. When the ball falls anywhere in the serving area, it earns one point.
2. When the ball lands in the region directly after the service area, two points are awarded.
3. When the ball lands in the third area following the service area, three points are awarded.
4. As seen in the illustration below, four points are awarded when the ball lands in the part after the serving area.



## 3.6 Exploratory experience

In an experimental experiment, the researcher evaluated forehand tennis technique. Before administering the test, an introduction module was supplied to the sample of the exploratory experiment in order to explain the test and introduce it to them. On Sunday, November 21, 2021, at precisely nine in the morning, an exploratory experiment for this test was conducted on a sample of There are twelve students enrolled in the third stage at the College of Physical Education and Sports Sciences/University of Babylon. The College of Physical Education and Sports Sciences/University of Babylon's tennis and field courts were used for the exam in order to reach:

1. Being aware of the test's suitability for the level of the sample participants and the test's suitability for the location
1. Be able to describe and administer the test.
2. Being aware of the challenges and issues the researcher could experience when carrying out the primary experiment and working to overcome them.
3. Verify the accuracy of the test-related tools.
4. How to organize the pupils on the field, flow the task, and take pictures of the creative performance.
5. Ensure the auxiliary work team's size and effectiveness.
6. Being aware of how long it will take to run the test.
7. Establishing the following scientific standards for

validity, reliability, and objectivity tests:

- **Validity of tests:** By submitting the tests suggested in the research to a group of professionals in the testing and assessment of racket games, the researcher employed content validity. They emphasized that doing the performance thoroughly before breaking the skill down into stages is the best way to test pupils as well as technical performance. Validity was therefore attained. The tests.
- **Reliability of tests:** Reliability is one of the important concepts that any measure requires in order to be valid for use. It is “accuracy and consistency in measurement. It also means that the test gives approximately the same results if it is re-applied to the same group of individuals, or gives the same results on another test and the researcher used it.”

### Test and retest method

It is one of the simplest and easiest methods used to achieve the reliability coefficient, which is based on “applying the same test to one group of individuals twice in a row on two different days” (Ibrahim, Marwan Obaid Al Majeed, 1999, p. 70) [1].

Accordingly, on Sunday, November 28, 2021, which is (7)

days after administering the initial test, the researcher again administered the skill tests to the same sample on whom the exploratory experiment was done. The findings revealed that the skill tests are distinguished by a high degree of dependability. The researcher then used the straightforward Pearson correlation coefficient to find the association between the outcomes of the first and second applications. Fig (2) depicts this.

### Objectivity of tests

In order to make sure that the results were not influenced by the arbitrators' subjective considerations, the researcher turned to identifying the element of objectivity via little or no variation in the process of assessing the test for the participants, independent of their differences. It is objective if it yields the same results regardless of how the arbitrators vary. (2004), page 9, Al-Hakim, Ali Salloum Jawad. The stability and objectivity of the tests are shown in table (2) by the Pearson correlation coefficient, which was determined between the arbitrators' results\*. In order to assess the objectivity of the proposed test, the researcher used the arbitrators' ratings of the test outcomes during remeasurement.

**Table 2:** Shows the reliability coefficient and objectivity coefficient for the technical test of the tennis forehand and backhand skill

Test	Reliability coefficient	Objectivity coefficient
Tennis forehand and backhand test	0.898	0.916

The tabular value was (0.878) below the significance level (0.05) and the degree of freedom (8)

### 2.7 Pretests

Before starting the field experiment, particularly the pre-test, it is crucial to establish a clear picture of what the student is expected to perform in order to get the objective experience necessary to administer the exam. In light of this, on November 29, 2021, the researcher provided an introductory unit to the two study groups. It was tied to learning the forehand and backhand strokes in tennis in order to get the research sample ready for the pre-test, which was then conducted for the control and experimental groups.

The researcher then performed three tries at the forehand and backhand tennis skills for the two study groups on November 30, 2021, and videotaped them. This was done to conduct pre-tests for the experimental and control research groups. In order to establish the same conditions or something similar while performing the post-test to acquire reliable findings, the conditions for the tests were likewise fixed in terms of the place, time, and nature of the test.

Note: During its presentation to the experts, the best attempt received approval (\*). To assess the technical performance of the students' forehand and backhand tennis skills, this image was produced on a DVD and given to the experts. A performance assessment form is provided with each DVD, and the researcher provided (10) In order to assure accuracy, the researcher divided the assessment score into five portions based on the number of steps in the activity. This resulted in a score for the skill as a whole. He graded each of the two stages, and the student's score was calculated by adding the five scores.

### 2.8 Educational Program

The researcher used the same number of units that were given in the college for teaching students how to play forehand and backhand tennis after completing the introduction unit and the pre-test. The instructional program lasts three weeks and

consists of six lectures.

Where the researcher implemented his educational strategy and agencies, where he produced an integrated educational curriculum of general and particular warm-up for each educational unit, at a pace of (90) minutes each unit. Three groups of two units each were created by grouping the units. Different learning contexts were utilized, including realistic in-person learning and synchronous and asynchronous online learning. It was provided the asynchronous online training. The day before the actual in-person lecture, which is comparable to a video, is used in the first educational group. Tennis forehand and backhand workouts, as well as visual representations of the various levels of performance, are also provided. The topic instructor used the main portion of the second day to put what was taught in the asynchronous education - which includes the first and second units - into practice. There was a change from asynchronous to synchronous learning for the third and fourth units. For exercises in practicing the forehand and backhand skills, as well as different images showing the technical performance of the skill's five steps, an instructional video was provided. The students used what they had learnt on the day before the lecture, which was permitted in the weekly lesson plan. The researcher combined the asynchronous and synchronous educational environments the day before the realistic in-person lecture for the students, in which the skill was presented, video models of it, and illustrative images reinforced with a thorough explanation of the stages of performing the skill. This was done for the fifth and sixth units as well as during the applied portion of the main unit of the lesson. On the second day, everything was taught and described during the applied portion and in the e-learning was put into practice.

### 2.9 Post-tests

On August 12, 2021, the researcher conducted the post-tests

for the experimental and control research groups. These tests involved the researcher, with the assistance of the assistant work team, performing three tries at the students' forehand and backhand tennis skills while filming them on a video camera under the same circumstances as the pre-tests that had previously been proven, and performing the post-tests to perform Skill. In order to establish the same or comparable conditions and produce reliable findings, the test conditions were fixed in terms of the test's location, timing, and type.

## 2.10 Statistical methods

The researcher used the Statistical Package for Social

Sciences (SPSS) to process the research data

## 3. Presentation, analysis and discussion of the results

**3.1 Presentation and analysis of the results of the pre- and post-tests for the two research groups:** The data was statistically processed after the research findings on the degree of evaluation of the technical performance of the forehand and backhand stroke skills in tennis established by the research sample participants were obtained. The (t) test was employed for linked samples in order to determine the significance of the pre-post changes, and table (3) demonstrates that.

**Table 3:** Shows the mean, standard deviation, and t-value calculated for the pre- and post-tests for the two research groups.

Variables	Group	Pretest		Posttest		t calculated	sig level	sig type
		Mean	Std. Deviation	Mean	Std. Deviation			
Technical performance/degree	Experimental	5.5	3.11	8.9	3.08	12.32	0.00	Sig
	Control	4.6	3.23	5.6	3.25	10.31	0.00	Sig

The calculated (t) values are significant at the level of (0.05) degrees of freedom = 24

The results of the technical performance of the forehand and backhand tennis skills for both the experimental and control research groups were analyzed using Table (3), and it was discovered that all differences between the pre-test and post-test for these results were significant differences because the significance level was less than (0.05).

## 4. Discussing the results of the pre- and post-tests

The researcher observes a discernible moral increase in the level of technical performance of the forehand and backhand stroke ability in tennis in the two research groups through the outcomes he achieved. This indicates that both instructional strategies for teaching the tennis forehand and backhand strokes are successful, but by comparing the pre and post arithmetic averages for both groups, it is observed The experimental group's arithmetic mean is greater than the control group's arithmetic mean, demonstrating both the superiority of this group over its counterpart and the consistency of all outside factors that may have affected the two groups' findings. The researcher identifies a number of things as the cause of this improvement:

1. The learner was able to draw a clear mental picture of this skill and know what exercises to do and how to prepare for it the following day as a result of the teacher thoroughly explaining this activity, providing the video model and illustrative pictures, and using different environments for the experimental group. According to every study, the manner of model presentation results in a higher degree of learning than auditory information. Additionally, one of the most crucial elements in the early stages of learning is the aural information that goes along with the visual information, such as an explanation with movement demonstrated by the model. (Al-Sheikh, Muhammad Youssef, 1984, p. 128) <sup>[3]</sup>.
2. The use of feedback by the instructor, which may considerably improve learning effectiveness and its integration into educational circumstances and experiences, allowing for the correction of faults and the creation of the best possible performance routes for students. Schmidt (2000) <sup>[4]</sup> made this observation, noting that practice in performance and feedback boosts learners' motivation and energy, improves correct performance, and decreases wrong performance (Schmidt and Weisberg, 2000) <sup>[4]</sup>.
3. The total number of (6) educational units to bring about change and improvement in the overall level is uniform

for both groups.

4. The use of diverse educational environments also increased the student's learning opportunities because, due to the environment's diversity, the student had to rely heavily on himself to create a productive learning environment by watching videos and photos of the event repeatedly for the purpose of learning.

## 5. Conclusions and recommendations

### 5.1 Conclusions

1. The creation of control and experimental groups for testing student forehand and backhand tennis technique performance.
2. In the post-test tennis forehand and backhand ability exam, the experimental group had higher arithmetic means compared to the control group.
3. When compared to the curriculum used by the subject instructor, the educational programs used in different educational settings demonstrated success.
4. The researcher's technique is thought to be effective at teaching the forehand and backhand shots in tennis over the course of four weeks.

### 5.2 Recommendations

1. The possibility of applying the approach followed by the researcher in learning the skill of the serve and the forehand and backhand volleys in tennis.
2. The possibility of using this curriculum after playing racket games such as badminton and squash to learn the basic skills in them.

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